

# **The Challenges for Sustainable Skills Development in the UK Automotive Supply Sector: Policy and Implementation<sup>1</sup>**

**Keith Bevis**

**University of Hertfordshire**

School of Engineering and Technology

University of Hertfordshire

College lane Campus

Hatfield AL10 9AB

k.bevis@herts.ac.uk

T: +44 1707 28 4369

M: +44 7768 361 293

Dr. Keith Bevis has twenty five years of industrial experience in manufacturing and quality within the medical electronics, and laboratory instrumentation industry. He has also served as a consultant targeting quality improvement. He is now the Commercial Manager within the School of Engineering and Technology at the University of Hertfordshire. Currently he works to develop sustainable business links with industry, through student activity, consultancy and Knowledge Transfer Partnerships. His research interests are focused on support for SMEs. He teaches on the Masters' programmes in the School and also continues as an associate lecturer on the Open University Masters programme for manufacturing.

---

<sup>1</sup> *This is an abridged and revised version of the paper presented to GERPISA Conference in Turin, 2008.*

## **Abstract**

**Purpose:** This paper seeks to develop a model for sustainable learning that can be used to target training resources more effectively. The focus is the automotive supplier chain where skills development is an urgent problem.

**Design Method/Approach:** A number of different surveys have been combined to draw out government, employer and staff approaches to training. From these a model was developed and its elements tested on a further group of SMEs.

**Findings:** From the initial surveys the outcomes of training across this segment of the industry were mostly unknown, unmeasured and often unpredictable. This result was in keeping with wider research which has indicated that even in large enterprises some 60% of training budgets lack quantifiable targets to achieve. Amongst the smaller SMEs the skills needs were different to those of the larger enterprises.

**Practical implications:** A model has been presented that can support sustainable learning. More specific criteria could be used to target training resources selectively. If an enterprise is ready, motivated and receptive; if training is only given to selected suitable staff whose achievement is subsequently recognised; if the training is relevant and focused; then the sustained learning will lead to measureable outcomes that relate to the enterprise's goals.

**Originality/Value:** The model provides a framework of criteria to target training more effectively. This is potentially a new way to focus skills development. The companies most likely to meet these criteria will be the competitive and innovative companies. The results can be adapted and applied also to most European SMEs.

## **1. Introduction and background**

### **1.1 Background to the UK automotive industry**

Prior to the current downturn, the European Automotive industry has been a key strategic player in the European Union with an estimated 10 million workers. The majority of these people work in the supply chain (CLEPA 2005). As a major employer, the sector must work to maintain its competitive edge if it is to keep that workforce engaged.

Nearly 250,000 people in Britain work in the automotive manufacturing sector which contributes around 1.1% of GDP, with around £9-billion of added value, representing 6.1% of UK manufacturing. But, there is still a significant productivity gap between UK and its major European rivals, France and Germany. The National Institute of Economic and Social Research attributes up to 20% of this to the UK's lower skill levels and poor demand for higher-level skills from employers (Whiteman 2005; Whiteman(SEMTA) 2005).

The beginning of the twenty first century has found parts of the UK Automotive Supply sector in a fragile and nervous state. Vauxhall and Rover have been the two most recent examples of upheaval amongst the vehicle builders. There already was overcapacity in the market. Financially the sector was under pressure both from the distant markets and from within Eurozone. Not only had globalisation brought more companies into the market, it had broken the tie between the customer and the natural local suppliers.

For small to medium sized companies (SMEs)<sup>2</sup> to sustain their operations and survive they must plan to grow. The Federations of Small Businesses' own member survey in 2006, found the aspiration for moderate growth amongst 48% of the East of England sample and the aspiration for rapid growth in 11% (FSB 2007). However, 10% of these companies quoted lack of skills as a barrier to growth, highlighting the link from training to sustainability.

---

<sup>2</sup> The European Commission defines a Small to Medium sized Enterprise as an enterprise that employs fewer than 250 persons, has an annual turnover not exceeding EUR 25 million and/or a balance sheet total not exceeding EUR 43 million. For a small business these limits are 50 employees and EUR 10 million. A micro business employs fewer than ten people and has a turnover or balance sheet not exceeding EUR 2 million.

This barrier is not a simple one. From our own earlier research “Not only did the evidence show a need for training; it also showed a reluctance on the part of the Small to Medium sized Enterprises within the supply chain to engage in training. .... For an SME, the burden of having to manage training or rather to manage and sustain the business whilst engaging in training can be too much. For these disincentives to be overcome the benefits to the business have to be very clear and measurable.” (Bevis 2001)

At the Lisbon Council in March 2000, European government leaders set themselves the target of making the European Union the ‘most competitive and dynamic knowledge-based economy in the world, capable of sustained economic growth’ within ten years (Leitch 2005). Human Resources (HR) are central to the creation and exploitation of knowledge and a determining factor in the European automotive industry's potential for innovation.

Arguably, employers’ skills needs are a consequence both of their product strategy and the firm’s characteristics (Leitch 2006). It is the managers of a business who must decide strategically how skills are deployed and on the level of training investment required. McKinsey (McKinseyGlobalInstitute 2005) found that for the automotive industry the leading productivity process innovations are centered around "Lean Manufacturing"<sup>3</sup>. Womack sets “Lean” in the context of automotive manufacture (Womack et al. 1990). “Lean is seen as specifically supporting the company’s ambition to be competitive” (Lewis 2000).

In this paper we look at current training and gain an understanding of the effectiveness of in-company training as experienced by the automotive supply sector. The particular training that is most pertinent to the automotive industry is training in elements of “Lean”. In addition we determine the potential for current training initiatives in the UK to meet the requirements of the automotive industry SMEs. We highlight these drivers for policy. Based on these findings we then propose a model for sustainable learning. The model questions the

---

<sup>3</sup> Lean Manufacturing is a key focus of much training in the automotive industry. Lean Manufacturing or Lean Production refers to a philosophy of manufacturing centred on removed waste and improving performance. Historically this is linked to the Toyota Production System.

extent to which the current provision of training can deliver learning experiences that develop sustainable outcomes. The conclusions of this research will be relevant to the wider manufacturing sector.

## **1.2 The training focus**

If we are to assess the sustainability of learning, we must start by looking at the methods of training evaluation. HR development professionals will talk of evaluation levels, nominally one to four. Kirkpatrick (1994) had identified four levels of evaluation as emotional, mental, physical and financial. The emotional level represented the learner's attitude toward the course. The mental level covered the tests that might be carried out in the class. The physical level looked at how the learning might have been transferred to the on-the-job environment. Were skills being implemented? Finally the financial level was concerned with the additional perceivable changes in the organisation as a result of the training. Kirkpatrick introduces a division in this last level into two, one for performance and one for financial outcomes (Kirkpatrick 1994). Despite the frequency of use of Kirkpatrick's four levels in the training industry, there is little evidence of a firm correlation between the four levels. Kirkpatrick's model may have been meant to be a first, global heuristic for training evaluation, thus some underlying assumptions have come into question (Alliger, 1989).

Earlier research points to an opinion in both political and media circles that productivity and competitiveness can be improved by further investment in training and developing skills. In a review of the existing research on the Return on Investment, ROI, two studies in the UK that linked training with profitability were compared. One showed a positive link between IiP<sup>4</sup> and profitability. The other found no link between training and profits in SMEs (Keep 2002). A direct causal link between investment in training and

---

<sup>4</sup> **IiP** represents the **Investors in People Standard** which provides a framework for staff development within an organisation. Companies attaining an IiP accreditation have demonstrated that they have systems in place to train and develop their staff.

company performance is not always found (Amos 1997). Thus, drivers for sustainable learning may be more than investment in training and its quality.

## 2. Research objectives

Four separate objectives are brought to bear in this study:

- 1) Determine the level of provision of skills development amongst both the private and public providers and the drivers for that provision.
- 2) Determine declared skills development needs for SMEs.
- 3) Help guide national policy on skills development for the Automotive Industry's SME community.
- 4) Propose a training model that supports sustainable development for SMEs.

For the current state of training, the context can be set by the CIPD's<sup>5</sup> own reviews of training and development (Kearns 2005). In its 2004 survey, under the heading of coaching its respondents indicated that

- 75% used coach's evaluation of the programme
- 37% assessed programme against its objectives
- 25% assessed programme against business performance

Over 60% of the Human Resources Directors in the UK's top 100 companies do not have any realistic measures of the return on investment that they are expecting from their training (Reid, 2004). This result concurs with earlier work in the USA where Olsen (1999), commenting on a 1996 survey, concluded that 60% of training does not transfer to the job.

Within the broad spectrum of training, in the automotive industry and its supply base "Lean Manufacturing" is a key feature (Womack et al. 1990). Care must be taken to prevent too great an emphasis being placed on lean manufacturing to the detriment of SMEs that need

---

<sup>5</sup> CIPD is the **Chartered Institute of Personnel and Development**, which is the professional body for Human Resources and Training in the UK.

support for innovation and development. In fact there are numerous cases where companies can become less innovative as they become “more lean” (Lewis 2000).

### **3. Methodology**

The methodology begins by identifying from the literature a set of characteristics of good training practice and using those characteristics to compare the East of England’s recent experience with SMEs against a benchmark. Our benchmark has been chosen as the Simulated Work Environment, at a vehicle manufacturer. A number of vehicle manufacturers have installed the Simulated Work Environment, SWE, with which to train staff in the common practices of their automotive production lines. These practices are underpinned by the principles of Lean manufacture and in particular continuous improvement.

The results of this literature review have defined good training practices as those that have supportive culture, reinforcement and coaching, skills practice and the need for the design of the training to simulate the job conditions (Olsen, 1999). In addition, employee intention, organisational acceptance and supervisory support are all characteristics that are also recommended (CET 2005). Behaviourally, the desire to learn, the conviction about the importance of the training, the perceived opportunity to practise what has been learnt and management support (Alzalabani, 2005) are also characteristics needed for good training situations. From these desirable attributes the following have been chosen to provide a minimum set for the reference benchmark:

- Management commitment to the importance of the training.
- Training that simulates the job environment and tasks.
- Ability of trainees to practise the skills.
- Supportive culture in the organisation.

The second source of primary data was a small sample of companies that had all identified training needs at the beginning and that there was a reasonable baseline for the level

of training provided. For the second and third objectives, to understand how training can affect the automotive industry, the method has been to interview key players in the training arena and review data from a number of surveys of manufacturers' training needs. In both the interviews and the reviews the primary research question has been about what training would be the most appropriate in order to develop the competitiveness of the sector. We met with representatives of the main sources of government funding for industrial training and with training providers. For the fourth objective, the perspective was that of the manufacturers themselves, for which we reviewed the output of a number of surveys. The final step is based on a reflection of all these findings.

#### **4. Findings and analysis**

##### **4.1 Findings from a benchmarking study at a vehicle manufacturer**

The vehicle manufacturer is training between 100 and 200 staff per month on their one day SWE programme. Three hundred and twenty sets of results were available for analysis.

The first conclusion, again recognising the problem with “scoring” (Reid 2003) has been that even though 94% gain some knowledge during the course, approximately 60% of test scores fall after two months. Of most use has been a study of the comments made by the individuals on the “after two month” questionnaire.

Of the 527 employees who took part in the training during June, September and October 2004, 322 responded to the request to complete the delayed questionnaire. The more useful results came from the 131 of these questionnaires which included comments on the use of the techniques learnt in their workplace. These comments were classified under three headings:

**Superficial** - not engaged – **33 responses**

**Relevant** – related – **70 responses**



### **Engaged – learning and reflection – 28 responses**

The analysis suggests that the effectiveness of the training on factory performance is less dependent on the individual's own learning achievement and more on other issues such as the organisational culture.

#### **4.2 Findings from the SME study based on companies in the East of England**

Sixty-four companies had taken part in the European Social Fund funded ASPEN project<sup>6</sup>. Of these companies, thirteen engaged in some form of lean manufacture training. The post project report particularly notes:

“13 companies undertook training activities that were focused upon taking cost and time out of their production processes, mainly delivered by MAS staff [*Manufacturing Advisory Service*] and the University of Hertfordshire's Automotive College personnel. This activity generated considerably the greatest proportionate number of beneficiaries as the training activities typically involved groups of shop floor personnel who were given the skills to understand “lean principles” and then supported as they implemented appropriate activities within their own specific work environment designed to cut out non-value added activity.” (Cranfield 2004)

The reason for including this quote is that it represents the equivalent of the “pre-post” comparison of the Vehicle Manufacturer experience. Looking deeper into the company reactions at this point, eleven of the sixteen companies surveyed acknowledged directly that they had experienced business changes or improvements as a result of the training.

Telephone interviews with the owner-managers or directors of these companies reveal a wider range of post training experience. These include:

- “*Training had identified members of staff who were not up to the training nor the company's longer term plans for their development.*” The intervention had been used as a substitute for Human Resource planning.

---

<sup>6</sup> ASPEN, Automotive Support Programme for the East of England, a project run by a group of public sector bodies that co-operated to support activities for workers and supply companies affected by General Motor's decision to cease car production at their Luton plant (Cranfield 2004).

- *“In the SME environment, the outcomes of the training may need to be adapted to the actual situation in the company to complement other development activities.”* This was a good example of double loop learning (Lewin 2005).
- *“Outcomes of the training were not directly measurable simply from a lack of measurement or appreciation of measurement prior to the training.”* This affects use of Kirkpatrick’s level four evaluation. Outputs tended towards being “better tracking” of defects.

### **4.3 Analysis**

Vehicle manufacturers have had a long tradition of lean manufacturing training and implementation going back to 1987 (McKinsey Global Institute 2005). Many of the tools and concepts introduced in the SWE workshop can be found throughout the vehicle manufacturer’s site and not only on the shopfloor. Amongst the SMEs, the initial perception was that the training delivered the required outcomes.

The longer term findings from the research are that the optimistic training perception is not supported by evidence and there are a number of noise factors that would mask such evidence. In the case of the vehicle manufacturer, less than half the respondents to the final survey made any comment about the usefulness of the training to their workplace environment. For SMEs it was the training itself that generated an understanding of the usefulness of measurement. The volatile nature of their markets meant that any longitudinal measurement would be disrupted by noise. Amongst the SMEs, there was no objective evidence that trainees had acquired new knowledge that could be recalled at the end of the course and certainly none that any implementation had been either successful or effective after a settling time had elapsed.

#### 4.4 Policy findings

To represent the public funding initiatives three UK schemes pertinent to the automotive industry were chosen. These were the Automotive Academy, the newly launched National Manufacturing Skills Academy (NSA-M) and the national “Train to Gain” Scheme. Interviews with senior managers questioned the strategic objectives for these nationally funded programmes. The key driver for the first two was the concept of a nationally agreed view of “World Class Manufacturing” which, coming largely from the perspective of automotive original equipment manufacturers, was based on Lean Manufacturing.

Working with the Automotive Academy since its inception in 2003 and interviewing its CEO has provided an insight to its vision and its actions in the industry. The drive from the board, which included senior representatives of Toyota, Jaguar, General Motors, GKN and SMMT, has been for the highest quality of training. The other major policy step in 2003 was the publication of the UK Government’s white paper “Realising our Potential” (DfES 2003). This reinforced the notion that skills development needed to be “Demand Led”.

The involvement of industry in training choices is tied into the developments that spring from the White Paper (DfES 2003). The key element at a policy level is the Sector Skills Agreements from Sector Skills Groups made up of representatives from industry. The common elements of their deliberations were brought together as four themes within SEMTA’s<sup>7</sup> Sector Skills Agreement (Bates 2008). These are:

- Productivity and Competitiveness
- Management and Leadership
- Technical Workforce Development
- Manpower and Resource Planning.

Planning for Automotive Academy and NSA-M has focused broadly on the first three of these. The mission of NSA-M is clearly defined by its owner SEMTA. Based on the

---

<sup>7</sup> SEMTA is the Sector Skills Council for Science, Engineering, Manufacturing and Technology – an Industry led body in the UK to promote and guide skills development in its sector.

intelligence from its Sector Strategy Group, SEMTA has set NSA-M’s role to focus initially on Technical Workforce Development at levels 2, 3 and 4 through the consistent implementation of business improvement techniques qualifications and on management and leadership. This follows on directly from the work started by the Automotive Academy. The full array of elemental modules of the NVQ<sup>8</sup> programme entitled “Business Improvement Techniques” is set out in figure 1 below.

<b>BUSINESS IMPROVEMENT TECHNIQUES PROCESS PATHWAY</b>		
<b>NVQ2</b>	<b>NVQ3</b>	<b>NVQ4</b>
Stat. regs and org. safety reqs.	Stat. regs and org. safety reqs.	Stat. regs and org. safety reqs.
Effective team working	Effective team working	Effective team working
Workplace organisation	Leading effective teams	Leading effective teams
Continuous Improvement (Kaizen)	Workplace organisation	Workplace organisation
	Continuous Improvement (Kaizen)	Continuous Improvement (Kaizen)
	Flexible Production & Manpower Systems	Flexible Production & Manpower Systems
Analysing & Selecting Parts for Improvement		Project Management Activities
Lead Time Analysis	Analysing & Selecting Parts for Improvement	
Visual management systems	Lead Time Analysis	
SMED	Visual management systems	Analysing & Selecting Parts for Improvement
TPM	SMED	Lead Time Analysis
Problem solving	TPM	Visual management systems
Flow process analysis	Problem solving	SMED
<i>Mandatory + 2 optional</i>	Flow process analysis	TPM
	Policy Deployment	Problem solving
	Value Engineering & Value Analysis	Flow process analysis
	Poka Yoke	Policy Deployment
	<i>Mandatory + 2 optional</i>	Value Engineering & Value Analysis
		Poka Yoke
		<i>Mandatory + 2 optional</i>

<span style="display:inline-block; width:10px; height:10px; background-color:grey; border:1px solid black;"></span> Mandatory modules
<span style="display:inline-block; width:10px; height:10px; background-color:lightgrey; border:1px solid black;"></span> Optional modules

**Figure1 Business Improvement Techniques – Process pathway**

For the supplier’s perspective, we interviewed a director of one particular private supplier that had a strong background in all three routes to provision. NVQ are less than 10% of its work. The Business Improvement Techniques Levels 2 and 3 constitute only half of that. Other manufacturing skills that make up 40% with computer aided engineering, CAE,

<sup>8</sup> NVQ National Vocational Qualifications, a qualification system based on workplace evidence, where level 2 is notionally equivalent to school leavers’ academic level.

adding another 10%. Basic Skills are 15% and the softer management behavioural skills make up another 20%. The remainder of its business is not direct training.

### 4.5 Analysis of training needs for SMEs

Insight into the SME management views on training requirements has been collected from three surveys aimed at manufacturing SMEs in general and automotive and advanced engineering SMEs in particular. There were two localised surveys in Breckland and Luton and a region wide interactive survey. The Breckland Survey<sup>9</sup> concentrated on small manufacturing companies in the North East of the Region, namely Norfolk and Suffolk (Bevis 2005). The Luton survey focused on an urban area to the South of the Region.

In the Breckland survey it was found that there are skills gaps in nearly half the companies and these gaps and training needs reflect the experience across the region with a strong emphasis on general engineering and machine shop skills.

Actual listed shortages included: general engineering, Computer Numerical Control, Computer Aided Design, machine shop skills, pattern-makers and welding. 80% of the companies do invest in skills training for their employees. Amongst the companies the level of participation in specific training has been:

Technical skills training	80%
Health & Safety	64%
IT Skills	49%
Management / Supervision	40%
Finance	22%
Personnel Issues / legislation	18%

---

<sup>9</sup> Forty-four SMEs were surveyed within a forty-mile radius of Thetford, Norfolk. Twenty-eight would class themselves as being in advanced engineering. The other sixteen are all in the automotive sector and predominately in motorsport. Just nineteen had more than ten employees.

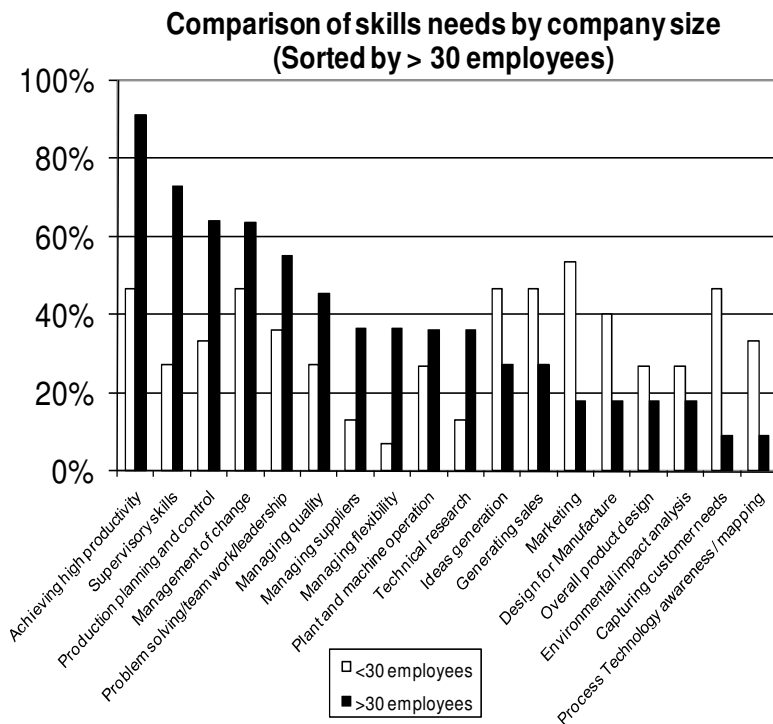
In the Luton survey, the senior executives of eighty nine small companies were interviewed (Philpott 2005). Of these, eighteen could be classed as manufacturing companies. On the skills issue nine of the eighteen companies indicated that they had skills needs. The range of skills mentioned included design engineers, senior marketing positions, sales people, skilled metal workers, millers, machinists, aerospace structures assembly technicians, senior and qualified finance staff, trained mechanics, fabrication, merchandising, technical design, business & financial skills, business/finance manager, electronic component repair, food process-millers, food marketers, food packing machine and specialist engineers.

Notably it is the practical skills, finance and management skills that have been identified. There was no mention amongst these companies of the supervisory role seen as a requirement within larger companies.

Finally a more wide ranging survey is based on regional responses to an interactive innovation tool (Philpott 2006). From this population of 231 companies, four distinct themes emerge from the data (Newman 2004) and support the findings of the two localised surveys. The first two have a clear resonance for manufacturing industry. These are

1. Specialist technical training is a key requirement, is peculiar to each individual SME and has to be seen outside any provision of generic training.
2. Supervisory training is the closest match with the two Academies' agendas; highly skilled supervisors are needed to support both the implementation of process innovation driven by the customer and the introduction of innovations for the sole benefit of the SME itself. There are records of good commercial benefits accruing from Lean Manufacturing and supervisory training, but these appear within a stable manufacturing environment. With the smaller companies the need for supervisory

training becomes a need for management training. These two differences are well illustrated in figure 2, drawn from that report. It shows a clear differentiation of skills needs between the small and medium sized companies.



**Figure 2 Comparison of Skills Needs by company size (Newman 2004)**

The next two move away from the comfort of stable manufacturing environments as seen in the larger enterprises:

3. Breadth of experience for apprenticeships – staff need a range of knowledge and experience to engage in innovation.
  
4. Marketing has been the strongest amongst the micro and small enterprises – again a skill required when a company produces a new product or service or attempts to penetrate a new market.

The findings here concur with those of Tether et al in their review of skills and innovation (Tether 2005). Reporting on the UK SMEs, the Cambridge Survey of SMEs (2002) highlighted that amongst innovating SMEs the view that the lack of marketing and sales skills and management skills is an impediment to growth was significantly higher than amongst the non-innovating ones.

## **5. Synthesis of a model of sustainable learning**

### **5.1 Elements of the model**

For learning to be sustainable, the training that facilitates it needs to provide measurable performance benefits to the organisation and be cost effective to implement, thus satisfying both business and political criteria. Here we set out a model for sustainable learning that builds on the research and the associated secondary research in the training literature. Based on an initial model from the literature and then feedback from sixteen companies, we develop a model of sustainable learning with ten elements, that we now describe.

#### *Company readiness*

For SMEs to be encouraged to grow, to be innovative and so be truly competitive, they need training support. All the companies surveyed had clear ideas about their training needs, but readiness goes beyond need. It contains the notion of being strongly competitive or having the drive so to be.

#### *Learner Readiness*

From the initial study of training outcomes in a vehicle manufacturer and a group of SMEs, we found that when training was imposed there was a strong possibility that at least half of the participants would not engage. This result suggests the risk that an SME's training budget, or even Governmental funding to support SME training is likely to be wasted, unless other specific safeguards are brought in. The general safeguards common to the use of Public Funds are only sufficient to ensure open and transparent financial dealings. Any definitions of



“Value for Money” are short term. The careful selection of learners and their support during and after the training exercise again increases effectiveness.

### *Relevance*

Training must be relevant to the organisation’s goals and activity. There are a number of diagnostic tools available for determining the state of a company and assisting in the selection of appropriate interventions including training. These range from the EFQM Business Excellence Model to BusinessLink’s<sup>10</sup> Gross Value Added Model. Some interviewees in the research have identified their need of a Human Resources view of the company to enable them to optimise their training budgets. This links with “Learner Readiness”. It is also clear that relevance is defined by the companies’ demand pull of training and not policy promotion.

### *Measured Outcomes*

We found a reluctance to engage in meaningful measurement of longer-term outcomes. This is due, in part, to a lack of understanding of what could be obtained from quantitative measurement and lack of knowledge of measurement systems. Perhaps more importantly, the volatile nature of the business environment makes the accuracy or meaning of any measurements suspect. This result suggests that any training is less effective than advertised. At best SME managements were recognising the need for performance measures in their companies which were more than just the routine financial reports. Within the automotive industry with support from the DTI<sup>11</sup> and SMMT<sup>12</sup> – Industry Forum, the use of the seven measures of Quality Cost and Delivery (QCD), has been promoted (DTI 2000).

The measures can highlight the priorities for improvement in production management with clarity and focus. The seven QCD measures can be used to quantify the results of any changes to the process (IndustryForum 2008). An increase in “lean” skill levels in a

---

<sup>10</sup> BusinessLink in the UK is the government’s advisory service for SMEs

<sup>11</sup> As part of his reorganisation of Whitehall, when he became Prime Minister in 2007, Gordon Brown replaced the UK’s Department of Trade and Industry, DTI, with a new Department for Business, Enterprise and Regulatory Reform, BERR.

<sup>12</sup> The Society of Motor Manufacturers and Traders

manufacturing environment becomes an incremental change to the manufacturing process itself.

### *Recognised Achievement*

Beyond just qualification, money or prestige, recognition of achievement supports a virtuous circle to promote further learning by the learner and colleagues. Recognition also leads to greater retention.

### *Focused Content*

Focus is seen within company training and development requirements. 'Focused Content' measures the practical implementation of the training activity, whereas the previous element of 'Relevance' was a measure of the strategic alignment of the activity to the company's goals. Where relevance is used to manage risk strategically by assessing whether investment in training is sufficiently in line with company objectives, 'Focused Content' is a measure of whether the actual training is fit for purpose.

### *Tuned Delivery*

Tuned Delivery is delivery that can be varied in accordance with the working patterns of the business. The experience of the survey respondents covered a range of training delivery, including the participative forms such as competence evidence collection (NVQ) as well as the more structured classroom activity. The actual experience varied across the sample with more external course presentations for the smaller less innovative companies and more in-house formal training for the larger more innovative.

### *Organisational Impact*


Organisational Impact is addresses longer term items such as profitability, staff retention, customer complaints record. If a strategy that supports sustainable learning is in place the anticipated consequence is improved profitability and competitiveness, in which case these last two scores should remain high. All the measures for organisational impact are relative. As

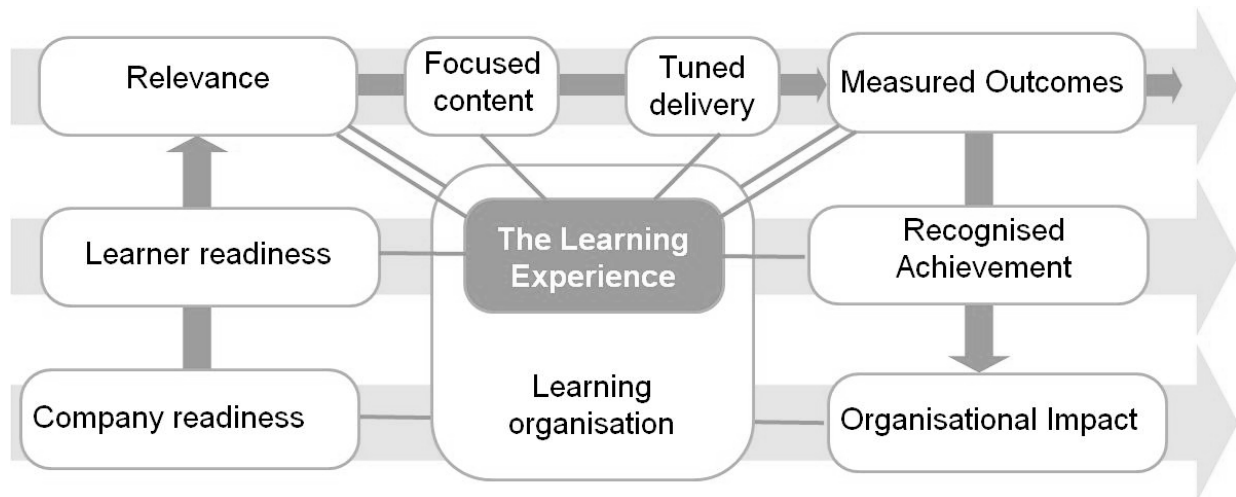
with those for measured outcomes, the training strategy must include measurements before and after the learning activity.

### *The Learning Organisation*

The Learning Organisation (Drucker, 1968; Schön, 1971; Senge, 1990) is one that is flexible and able to adapt to changing conditions. Both the organisation and its staff are learning so as to foster continuous improvement and so the concept of a Learning Organisation is fundamental to sustainable learning. Employer expectations in general were beyond the normal measurable outcomes.

## **5.2 The interrelationships within the model**

These elements are brought together with three thematic pathways into the final model shown in Figure 3. The central pathway is the learner's journey from preparation through to achievement. The upper pathway considers the role of training provision showing that relevant training is aimed at producing measurable outcomes. The lower pathway develops the company experience to show that sustainable training first enables a cultural move to a learning organisation and beneficial impact on the organisation. Together with the interrelationships, there is a set of causal links (indicated by ) through the elements from company readiness to organisational impact. Here it is apparent that in this model the learning organisation emerges from the successful interaction of the other elements.



**Figure 3 Model of Sustainable Learning**

In this way the model sets out the necessary elements for sustainable learning to take root. At the strategic level, the model can be used to support a business manager’s decision making. In drafting an HR policy it demonstrates to the manager how future training could affect staff, productivity, profitability and competitiveness. It could then be used to assess the performance of an HR/training policy.

## 6. Conclusions and recommendations

This paper has considered the challenges for sustainable skills development in the UK automotive supply sector, by focusing on how policy is being implemented. By first looking at how training is experienced in the sector, principally in the East of England and how public policy drives and supports training, it has moved on to present a learning model that could be used to improve the sustainability of training investment.

For businesses to sustain their operations, they must develop and grow. Training is an integral part of that process. Our initial research confirmed that there was little objective evidence on the effectiveness of much training. Using a controlled group within an OEM and the experience of a number of SMEs who have taken part in the training we found no evidence of measured outputs, e.g. Kirkpatrick’s level 4/5 except where lean manufacturing

training has been applied in a specific interventionist approach. Here it has been specifically within the automotive supply chain development initiatives. There were mixed outcomes very dependant on inclination/motivation of learners.

With regard to national policy on skills development for the Automotive Industry's SME community, the investigation has shown that there is a clear national policy for the SME community and that this has been implemented in part through the two Academies. The primary links to policy are the promotion of Lean Manufacturing and the raising of the minimum skills level of all workers.

The culmination of a number of Government policies and initiatives has meant that publicly funded provision of training has been focused on lean manufacturing or its equivalent, business improvement techniques at NVQ levels 2 and 3, with most funding targeting the lower level. This has clearly benefited the productivity aims of the medium sized companies. With the smaller SMEs there were found to be distinct differences between their perceived skills needs and those skills needs determined at a National level from consultations that have fed into SEMTA. This has highlighted a weakness in National policy. Smaller enterprises do not have the same level of access to the training that most suits their needs.

Based on this research into the state of training amongst the automotive supply SME community and their training needs, a model has been presented that can support sustainable training. Within the model we have identified specific criteria that could be used to target training resources more selectively. If an enterprise is ready, motivated and receptive; if training is only given to selected suitable staff whose achievement is subsequently recognised; if the training relevant and focused; then there should be measured outcomes that relate to the enterprise's goals.

The companies most likely to meet these criteria will be the competitive and innovative companies. It is our contention that training targeted on these companies will be

sustainable. It will provide measurable performance benefits to them and be cost effective to implement, thus satisfying both business and political criteria.

## References

- Alliger, G. M., ; Janak, Elizabeth A. . (1989). "Kirkpatrick's Levels of Training Criteria: Thirty Years Later." *Personnel Psychology* 42(2), 331-42.
- Alzalabani, A. H. (2005) "The regulations of continuous training and its effectiveness." *13th Annual Conference of the International Employment Relations Association (IERA)*, Aalborg University, Denmark.
- Amos, E., Spiller, J., and Storey, D. (1997). *The Middle Market – How They Perform: Education, Training and Development*, Foundation for Manufacturing and Industry, London.
- Ashton, D. N. (2004). "The impact of organisational structure and practices on learning in the workplace." *International Journal of Training and Development*, 8(1), 43-53.
- Bates, S. (2008). "Meeting Notes." K.Bevis, ed.
- Bevis, K. (2006). "A review of the current state and sustainability of in-company training in the Automotive Supply Chain in East of England." Hertfordshire, Hatfield.
- Bevis, K., Brooks, L. (2005). "Motorsport & Advanced Engineering in Norfolk Needs Analysis." Breckland Council.
- Bevis, K., Kalantaridis, C., Nelder, G. (2001). " Report of the Supply Chain Group Research for the Luton Vauxhall Partnership." Regional Supply Network - East.
- CET. (2005). "An Appreciative Approach to Training: A Theoretical Discourse on the Integration of Appreciative Inquiry with Theories and Practices Used to Enhance Transfer of Training ", CETDept of CWRU (American University).
- CLEPA. (2005). "Education, Training and Learning to Increase Competitiveness in the Automotive Industry." European Association of Automotive Suppliers.
- Cranfield. (2004). "ASPEN Project 2002-2004 for the East of England Development Agency." Cranfield University.
- DfES. (2003). "21st Century Skills; Realising Our Potential; Individuals, Employers, Nation." DfES, London.
- DfES. (2005). "Skills: Getting on in business, getting on at work."
- Drucker, P. (1968). *The Age of Discontinuity: Guidelines to our changing society*, Harper and Row.

- DTI. (2000). "Quality Cost Delivery - seven measures for improved competitiveness in manufacturing industry." *DTI/Pub 4868/3k/9/00/NP. URN 00/754*, Department of trade and Industry, London.
- EEDA. (2003). "East of England Framework for Regional Employment and Skills Action." EEDA, Cambridge.
- FSB. (2007). "East of England Exec Summary of 'Lifting the Barriers to Growth in UK Small Businesses 2006'." Federation of Small Businesses.
- Handy, C. (1995). *The Age of Unreason*, Random House, London.
- IndustryForum. (2008). "Quality Cost Delivery." AutoIndustry - Quality Cost Delivery.
- Kearns, P. (2005). *Evaluating the ROI from Learning*, CIPD.
- Keep, E., Mayhew, K., Corney, M. (2002). "Review of the evidence on the rate of return to employers of investment in training and employer training measures." *SKOPE Research Paper No.34 Summer 2002*, SKOPE, Warwick Business School.
- Kirkpatrick, D. (1994). *Evaluating training programme: the four levels*.
- Leitch, S. (2005). "Skills in the UK: The long-term challenge." HM Treasury.
- Leitch, S. (2006). "Prosperity for all in the global economy - world class skills." HM Treasury.
- Lewin, K. (2005). "Chris Argyris: theories of action, double-loop learning and organizational learning."
- Lewis, M. A. (2000). "Lean production and sustainable competitive advantage." *International Journal of Operations and Production Management*, 20(8), pp. 959-78.
- McKinseyGlobalInstitute. (2005). "Increasing Global Competition and Labor Productivity: Lessons from the US Automotive Industry." McKinsey Global Institute.
- Newman, R., Philpott, E., Bevis, K., (2004). "An analysis of skills needs in small and medium sized manufacturing companies in the Eastern region." i10, Cambridge.
- Olsen. (1999). "Strategies that will increase Skills transfer." *International Society of Performance Improvement, New Mexico Chapter Newsletter*.
- Philpott, E., Bevis, K. (2006) "'Access to knowledge' – a successful approach to university-business working using an online innovation test as a CRM tool." *ISPIM 2006 Conference - Networks for Innovation*, Athens.
- Philpott, E., Worgan, P. (2005). "City Growth, Luton Survey of Business Needs - a report to City Growth, Luton Board."

Reid, M. A., Barrington, H., Brown, M.,. (2004). *Human Resource Development - Beyond Training Interventions*, CIPD.

Reid, N. (2003). *Getting Started in Pedagogical Research in the Physical Sciences*, LTSN Physical Sciences, Hull.

Schön, D. (1971). *Beyond the stable state*, Penguin, Harmondsworth.

Schön, D., Argyris, C. (1978). *Organisational Learning: A theory of action perspective*, Addison-Wesley, Reading, MA

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organisation*, Doubleday.

Tether, B., Mina, A. Consoli, D. Gagliardi, D.:. (2005). "A Literature Review on Skills and Innovation. How Does Successful Innovation Impact on the Demand for Skills and How Do Skills Drive Innovation?" ESRC Centre for Research on Innovation and Competition University of Manchester, Manchester.

Whiteman, P. (2005). "Expression of interest in a national skills academy (NSA) to open in autumn 2006 ", SEMTA, the Sector Skills Council for Science, Engineering and Manufacturing Technologies.

Whiteman(SEMTA), P. (2005). "EXPRESSION OF INTEREST IN A NATIONAL SKILLS ACADEMY (NSA) TO OPEN IN AUTUMN 2006." SEMTA, the Sector Skills Council for Science, Engineering and Manufacturing Technologies.

Womack et al. (1990). "The machine that changed the world", Perennial