

## The Impact of the Knowledge Transfer Exchange Nodes



Transferring knowledge, driving innovation

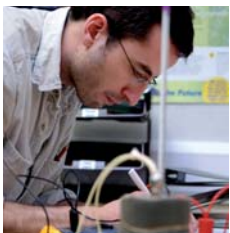
## The Impact of the Knowledge Transfer Exchange Nodes



In October 2008, the New Engineering Foundation, with generous support from the Gatsby Charitable Foundation, was delighted to announce the launch of the Knowledge and Technology Exchange Node Projects in engineering, applied science and technology.

Their aim was to enable FE colleges to develop and grow their knowledge and technology exchange activities by awarding grants of £15,000 for the development of Knowledge and Technology Exchange Nodes (KTENs). Qualification required colleges to bring together the right people from business, Higher Education and from their own and other FE institutions to establish a plan for a dedicated technology and knowledge transfer and exchange function.

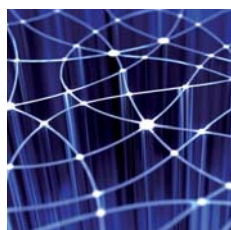
Our vision was that, through KTENs, businesses will have a more visible and structured interface with FE colleges. Key drivers of the KTENs have been the colleges and the companies with which they engage, with their direction influenced by both regional and national priorities as identified in Regional Economic Strategies.

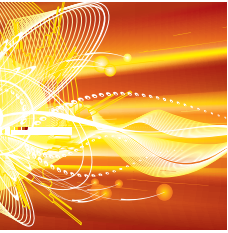
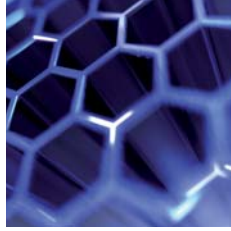


In January 2009, 14 colleges covering 11 projects were announced as having successfully bid for the grants.

These case studies are the stories of each KTEN and how they have transformed the colleges, businesses and communities involved.

Professor Sa'ad Medhat  
Chief Executive  
New Engineering Foundation





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## INTRODUCTION TO THE KTEN:

### The College and the Partnership

Barnfield College has a long history of working with local employers and academic networks, supporting business innovation projects at, among others, London's Luton Airport, and working with such partners as Monarch Airlines and Airport Signature Executive Services. However, the College is best known for its innovative educational partnership, providing leadership and knowledge transfer in the development of two of the UK's fastest improving school academies.

The College is working in partnership with three other leading education and innovation FE Providers, forming the National Corporate College Innovation network. The existing products and services are limited in scope and range, as funding has been sporadic or limited to FE self investment.

### The consultancy and partners covered by the KTEN:

Over the last 2 years the College has been working in partnership with the local Bedfordshire Primary Care Trust (PCT), Luton Teaching Primary Care Trust, the Royal College of Surgeons and the Clinical Dental Technicians Association, with the aim of setting up a cutting edge dental training and development centre.

The Barnfield Dental Academy is a partnership between the local PCTs, Barnfield and general and specialist dental practitioners, providing vocational training, an innovation base for local practitioners, as well as a local dental facility for the central Luton community. The link between the College, the PCTs and local dental practitioners is fundamental to the success of this dental training centre. This allows the College to identify the needs of the employers as well as the students who are engaged in the learning.

Access to education and training for dental nurses has always been a critical issue within the profession, as taking the student dental nurse away from the chairside can impact on the delivery of care to patients, especially if the practice does not have adequate staff to cover study leave. Also, the induction process for newly employed dental nurses varies hugely from practice to practice.

Thus it was identified that a standardised process would benefit not only employers and employees but also patients, ensuring all newly employed dental nurses are working safely in the dental environment taking into account health and safety, cross infection control and

patient confidentiality.

### The critical issues:

- The critical success factor of the Induction Pack (see below) is a standardised and fully supported induction process for newly employed dental nurses, thus ensuring the development of their knowledge and understanding, the care and safety of patients and a structured process which supports employers in meeting GDC requirements regarding the employment and education of student dental nurses.

## THE PLANNING BEHIND THE KTEN

We had a range of objectives within our project with the first part of the process being the development of a Dental Nurse Induction Pack. The Barnfield Induction Pack for Dental Nurses is a distance learning package that has been developed for newly employed dental nurses. This will ensure a robust induction process that not only supports them but also their employer, thus allowing a planned process into their career, and also prepare them for undertaking a General Dental Council (GDC) recognised primary qualification e.g. Advanced Apprenticeship in Dental Nursing or the NEBDN National Certificate in Dental Nursing.

### The catalyst for the partnership:

- In August 2008 the GDC introduced statutory registration for all Dental Care Professionals; this group includes Dental Technicians, Clinical Dental Technicians, Dental Hygienists, Dental Therapists, Orthodontic Therapists as well as Dental Nurses. The main purpose of statutory registration is to ensure the protection of patients. To ensure this the GDC states that all dental nurses must be working towards a registrable qualification. However, due to course availability and start dates, it is not always possible for newly employed dental nurses to be able to start on a course immediately.
- Also, a trial period during the first few months of employment is essential to ensure the new employee does indeed want to embark on a career in dental nursing.
- The Barnfield Induction pack will support the above and also provide the opportunity for a standardised induction process across Bedfordshire Dental Practices, with the potential for this to be rolled out across the East of England, and then nationally.



## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge

- The Barnfield Dental Liaison Officer will link with local practices identifying any newly employed dental nurses, who will then be offered the opportunity to use the induction pack. It will be essential that a named work-based mentor is identified to support the student dental nurse through the induction process. The work-based mentor should be a General Dental Council (GDC) registrant, ideally a dental nurse who holds a recognised registrable qualification e.g. Advance Apprenticeship in Dental Nursing or the NEBDN National Certificate for Dental Nurses or equivalent.
- The work-based mentor will meet regularly with the student to ensure they are working steadily through the induction pack and building their portfolio of evidence ready for verification on completion of the pack. A contact sheet will be provided to enable the work-based mentor to keep a record of any contact with the student.
- The induction pack includes a learner guide entitled “Working Safely in Dental Practice” which is provided by Mullins Training, an Australian business that provides resource materials to organisations training dental nurses in the UK (as well as Australia and New Zealand).
- The student will then work through each section of the learner guide, studying and learning the topic before completing the self-assessment contained in the learner guide. The mentor will mark the self-assessment providing the student with any necessary feedback; this should then be placed in the student’s portfolio. Marking guides will be provided to support the mentor in this process.
- The involvement of work-based mentors to support the learners also provides Continuing Professional Development opportunities for registered dental nurses.
- The student’s portfolio will contain:
  - Student information sheet
  - Current curriculum vitae
  - Employer statement to confirm employment status
  - Workplace induction paperwork
  - Workplace mentor information sheet
  - Mentor’s GDC registration certificate and qualification certificate (copies)
  - Completed mentor-student contact sheets
  - Completed learning styles questionnaire
  - Completed and marked self-assessments from learner guides
  - Certificates of any in-house or external training attended (copies)
  - Completed Barnfield application form for primary qualification
  - Letter of support from employer

- A presentation was delivered to the Local Dental Committee (LDC) regarding the induction pack and its benefits to dental practitioners.
- An information evening was also held in partnership with a local dental practitioner, 25 dental care professionals from five dental practices were in attendance, which provided the platform to disseminate information regarding the Induction Pack, answering any questions that arose and receive feedback on the initial thoughts of those in attendance.
- This information evening was an opportunity to enable dental care professionals to acquire necessary CPD hours as well as increase their knowledge of what is happening with regards to dental nurse education in the area.
- Feedback allowed the college to take into consideration further critical issues, e.g. the concern of being allocated protected time as a mentor to routinely meet with the student dental nurse to ensure they are fully supported whilst working through the induction pack.

### Impact and key lessons learned:

- Lessons learned by the partners:

The critical issue that arose was the freeing up of a qualified dental nurse to take on the role of the work-based mentor. It is worth emphasising, however, that this could, in fact, be beneficial as it would provide the nurse with CPD opportunities.

As identified by both dentists and dental nurses the most significant issue is ensuring protected time for meetings to take place between the student and the work-based mentor. Taking two dental nurses away from the chairside has a huge impact on patient care. Recommendations were made to encourage meetings to be undertaken as a lunch and learn activity, where the student and work-based mentor have lunch together while discussing and recording the progress that has been made.

During the delivery of the induction packs to the practices who expressed their interest, it was evident that one had to be reconsidered as there was only one qualified dental nurse in the large practice, and the potential students expressed their concern at the lack of support towards education and training. One student would rather take the Apprenticeship route as she feels this suits her style of learning but her employer is unwilling to support her in this as they do not support dental nurse training during working hours, they would rather she did the traditional exam based qualification at evening class. This is unfortunate and confirms the lack of support in some dental practices towards the education and training of dental nurses. Dental nurses are the only members of the dental team that are in many instances still expected by their employers to attend their training for their primary/registrable qualification in the evening, this has an impact on their learning, having spent a full day in the dental surgery many students are tired and not fully engaged in the lesson.

- Impact of KTT activity on the college:

As students will have already used the induction pack this will be enable them to embark on work-based assessment as soon as they are registered with City and Guilds, on units such as Health and Safety and Infection Control. This will have an impact on the delivery of these topics as it will be revision and reinforcement rather than delivery of knowledge. Thus changing how the tutors deliver the lessons.

### Case studies from the partners:

- NHS Bedfordshire Dental Service:

“The implementation of a dental nurse induction programme at Barnfield College will, I believe, support and standardise the workplace induction process. As dental nurses are employed within a variety of settings, the induction pack will ensure standardisation is achieved in relation to their learning prior to a formal programme of study. It will assist employers in meeting the necessary requirements set down by the General Dental Council (GDC) since the implementation of statutory registration. In addition, the Induction pack will support work based learning and will give other members of the oral health care team an opportunity to utilise their skills and develop their role further as a mentor.

“It will substantiate government initiatives in relation to lifelong learning and will raise standards of dental nurse training and education within the work place. In my role as a dental nurse tutor working within a large NHS organisation, the induction pack, I believe, will be an invaluable resource to support not only our induction process but also our appraisal system under Agenda for Change. It will enable a ‘trainee’ dental nurse employed within the organisation to formulate a personal development plan on employment, thus meeting the requirements of the NHS Knowledge and Skills Framework.

“I am in full support of this initiative and look forward to using this Induction pack within the Dental Service.”

Jane Dalgarno  
Dental Nurse Tutor  
Dental Service, NHS Bedfordshire

## THE FUTURE

### The next steps:

- The next step is to pilot the induction pack with six student dental nurses across a minimum of two dental practices. This will enable Barnfield to seek feedback from the employer, work-based mentor and student and thus identify any potential areas for further development to improve the pack.
- On completion of the pilot, the pack will then be offered out across all practices. The wider roll-out of the induction pack will commence in September 2009.

- The College envisages that engaging newly employed dental nurses in the use of the Induction Pack through Barnfield will lead them to undertake the next step of their education on a Barnfield training programme, as they will be familiar with the organisation and the team of dental nurse tutors.

- There are 95 NHS dental practices across Luton and Bedfordshire and approximately a further 30 private practices who could benefit from the induction pack. Therefore, it is envisaged that there is a potential in the region of 50-plus newly employed dental nurses who could benefit from the induction pack.

### Measuring impact; key facts and figures:

- For the pilot, dental nurses were engaged from practices that already have staff who have undertaken dental nursing courses at Barnfield. With their support, it is hoped that other practices will now be engaged, too..

- International Dental Show

Angie McBain, Lead Dental Nurse Tutor, attended the 33rd International Dental Show on 24-28 March 2009 at the Koelnmesse exhibition grounds, in four of the Messe’s eleven exhibition halls, each hall consisting of three floors – a total of 138,000 square metres of exhibition space.

More than 1820 exhibitors from 57 countries took part, 65% of them foreign (ie non-German), presenting over 1,100 new products to more than 106,000 visitors.

IDS takes place in Cologne every two years and is organised by the Gesellschaft zur Foerderung der Dental-Industrie mbH (GFDI), the commercial enterprise arm of the Association of German Dental Manufacturers, or Verband der Deutschen Dental-Industrie eV (VDDI). The German Association of Dental Technicians, the Verband Deutscher Zahn techniker Innungen (VDZI), and the German Dental Association, Bundes Zahn Aertze Kammer (BZAK), organise the supporting programme.

However, no provision at all was made for dental nurses, who are held in considerably less esteem in Germany than in the UK. There is no German dental nurses’ association; dental nurse training is organised by the local dentists Kammer, or Chamber, with no dental nurse input; and many exhibitors made it quite plain that they had no intention of talking to any dental nurses, not even the President and Chief Executive of the British Association of Dental Nurses.

This emphasised that the UK recognises the important role that dental nurses have within the dental team, and that we set the precedence in this regard, certainly in Europe and possibly globally.



## INTRODUCTION TO THE KTEN: The College and the Partnership

Burnley College is a general Further Education College located in East Lancashire. The College is the largest provider for 16 to 18 year olds in the borough, as well as being the main provider of adult learning and work-based learning in the area. The College provides a wide range of programmes across a range of levels from entry level to degree level. The college has close partnership links with:

Local schools – which allow the college to promote the image of engineering as a possible future career path to their pupils, and provide them with learning opportunities.

Employers – who advise and provide input for designing new relevant learning programmes. Employers also provide opportunities for teaching staff from the college to spend time within their organisations, allowing them to gain up to date knowledge of current and future engineering practices and technologies.

SEMTA – which provides advice on validating new NVQ programmes which will meet the needs of employers.

University of Central Lancashire (UCLan) - which enables the College to provide relevant HE learner progression routes.

Local Authority – which advise on new funding stream opportunities, and aids in enhancing employers links.

### The consultancy covered by the KTEN has targeted:

Development of new, relevant programmes to meet employer needs.

Provision of professional development opportunities for engineering tutors.

Updating and enhancing students' learning materials.

Cascading the knowledge gained by staff down to learners through the production and delivery of up-to-date materials and lesson content within their educational programmes.

### The learners involved are:

With employer support, the college has actively promoted engineering as an exciting future career path and delivered engineering programmes to:

GCSE level to 14-16 year olds drawn from local secondary schools.  
BTEC F/T National Diploma Engineering students.  
Engineering Advanced Apprentices.  
HE Engineering students.

### The critical issues are:

ensure that the college is able to meet a skills gap in the composites area, identified by employers and seen as critical for the future development of advanced manufacturing in the sub-region.

the College's need to strengthen its relationship with employers and work with them to develop a closer understanding of their skills needs, so it could ensure lecturing staff were fully aware of and familiar with current and future technologies and work practices within the engineering sector.

## THE PLANNING BEHIND THE KTEN

### The summary action plan:

December 2008. Inaugural meeting of Burnley College, SEMTA and NWAA for forward planning. Plus complete provision of equipment and furniture at Design and Innovation Academy.

December 2008. Milestone planning with employers to scope project and set action to develop units for qualification. Pilot use of D&IA with first group of year 9 students.

January-March 2009. Regular planning meetings with key players for development of programme.

January 2009. Meeting with SEMTA and awarding body to discuss approval for new programme. Official opening of D&IA.

March 2009. Apply for approval of NVQ Level 3 Qualification in Composites and Aerospace.

April 2009. Pilot programme with schools and specific key employers.

April 2009. Project Evaluation and Dissemination event.

### The catalyst for the partnership:

A need for the college and employers to agree and develop new learning opportunities for learners, that would provide them with the skills and knowledge to meet the current and future needs of the engineering industry.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

- Over a period of months, meetings between a number of employers and the College team took place to design and develop an NVQ level 3 in Composites qualification, putting together a Framework and a Technical Certificate.
- This then extended to the proposals for NVQ Level 2 and level 3 programmes in Composite Production, and Composite Repair. Candidates for the above programmes would be drawn from college learners, and employees from the companies involved in the process.

- During their secondments to industry, staff gained a great deal of knowledge covering a variety of engineering disciplines including:

New manufacturing methods and techniques currently being used within the engineering industry.

Modern cutting techniques and production control.

Introduction of MRPII systems linked to Kaizen.

Lean techniques in general.

### Impact and Key Lessons Learned:

- Lessons learned by the partners:

It became apparent that the process was long and extremely time consuming requiring both college staff and employers to input a great deal of time and energy.

Employers, though, were prepared to commit to the development process if they could see relevant and positive benefits for their businesses.

The involvement and endorsement of the North West Aerospace Alliance (NWAA) was vital. They are a highly respected body and their support gave the College credibility in its dealings with key employers.

- Impact of KTT on the College:

Enhanced employer engagement.

Employer input into educational programme design.

New Level 2 & 3 NVQ in Composites Repair & Production.

College provision now more closely meets the needs of employers.

Teaching staff now up to date with latest engineering manufacturing technologies and practices.

- Impact of KTT on STEM Learners:

Learners are provided with enhanced and updated learning materials.

Design and Innovation Academy (DIA) now used to deliver programmes, permitting learners to design, prototype, and manufacture an end product through the use of the new DIA facilities.

Tutors provide learners with practical experience of new engineering practices.

New HE and NVQ learning opportunities for learners.

- Impact of KTT on STEM teaching and Learning:

Staff used the knowledge gained in their industrial secondment to:

Modernise and update the content of a number of learning programmes

Design and develop NVQ Level 2 & 3 in Composites

Enhance lesson learning materials.

Provide learners with practical knowledge of latest engineering technologies.

Produce validation proposals for new HE programmes including, two new Foundation Degrees, and University Certificates in Composites and Aerospace technologies





### Case studies form the partners:

These will be considered once the new apprenticeship framework (based on composite materials) is operational and can be evaluated.

### The KTENS experience to date:

It is necessary to log and feedback details of ongoing progress of the employer meetings and discussions to the wider engineering team, to ensure that all staff are aware of targets and progress made.

The project has been over reliant on key College staff and, on reflection, a wider project team should have been established.

One critical success factor has been the approval and delivery of new NVQ qualifications, in order to meet the current and future needs of employers.

## THE FUTURE

### The next steps:

Validation of new Level 3 qualifications based on composite development and repair.

Piloting of new apprenticeship framework based on new level 3 qualifications.

Review with employers of the pilot with aim of rolling out a nationally approved framework.

Validation of new up to date level 4 programmes.

Increase progression opportunities for learners.

Widen participation through a broader range of engineering programmes.

Enhance and widen student learning opportunities (industrial projects).

Provide learners with practical knowledge of latest engineering technologies.

### Measuring impact; key facts and figures:

- For the College, additional income leveraged:

Local Authority: £100,000.00  
(used to purchase new modern lathes and milling machines for the engineering workshop).

HEFCE Capital: £70,000.00  
(used to purchase equipment for the university level students at the new College).

- Estimation of the number of new STEM learners engaged:

It is envisaged that there will be an increase in apprenticeship numbers by approximately 20 candidates over 2009/10.

It is also envisaged that full time recruitment will rise by a similar amount over the same period.

The development of composite programmes at University level will increase HE enrolments on short programmes by approximately 50 learners.

- Changes in STEM learner progression routes:

Two new foundation degrees to meet the needs of employers are being designed and developed in New Technology and Design & Technology

A well as validation proposals for two new University Certificates in Composites and Aerospace technologies.

- Estimation of new STEM staff engaged in Knowledge Transfer:

Staff engaged in the process include Mike Barker, Phil Messenger, Phil Shuttleworth, Mark Rosenthal.

Plus the recruitment of an additional new lecturer in engineering who will be fully engaged in the process.

- Impact on the quality of STEM provision:

This was not initially a project priority, but subsequently the College has just undergone an Ofsted inspection and attained a grade of 'outstanding' for all areas including teaching and learning.

- Estimation of new STEM businesses engaged:

Aircelle  
BAE Systems  
Brookhouse Holdings

- Estimation of existing STEM business engaged in Knowledge Transfer activity:

10 engineering companies are now sending learners to learning programmes at Burnley College.

- Estimation of increase in business awareness of Knowledge Transfer

Through NW Aerospace Alliance new companies including BAE and Aircelle are now indicating they will be sending candidates for the new programmes being developed.

- New jobs created as a result of KTT activity:

None directly, but the division is expanding to meet the needs of delivering the new programmes and is therefore in the process of recruiting extra staff.

## INTRODUCTION TO THE KTEN: The College and the Partnership

The Engineering Prospects network comprises of the two Sussex Engineering CoVEs (Centres of Vocational Excellence) and the Engineering Sector Alliance. The colleges who are involved with the CoVEs have excellent reputations for their engineering provision especially with employers in the Sussex area. Employers they have worked with include Edwards, Glaxo Smith-Klein, and manufacturing, electronics and general engineering Companies as well as a range of smaller engineering businesses.

Central Sussex College is known for Production, Electronics, Aeronautical and Maintenance training and provides Work Based Learning for local employers working in these fields. The College also delivers the Work Based Learning provision for Ford Motor Company and runs several Apprenticeship schemes for regional companies. Its provision is delivered over four sites in north and mid Sussex. The College was one of the first four colleges nationally to achieve Action for Business College status and is applying for TQS status.

City College Brighton and Hove has particular strengths in Advanced Manufacturing Technologies such as Mechatronics, Robotics, Programmable Logic Controllers and CNC. It is part of the Sussex Business and Finance CoVE which provides support for management courses for small engineering businesses which dominate the sector. The College was one of the first four colleges nationally to achieve Action for Business College status.

Northbrook College offers a wide range of engineering qualifications. It has well equipped traditional and modern workshops to enhance the learners experience on Mechanical, Manufacturing, Electrical and Electronic courses at its Broadwater site and Automobile and Aerospace Engineering at its Shoreham Airport site. The college offers courses in the multi-skilled activities of mechanical, automobile and aircraft restoration and model engineering. It also has an Aerospace Engineering CoVE in partnership with Brooklands and Farnborough Colleges.

The Engineering members of Sussex Council of Training Providers (SCTP), who are also partners in the network, work exclusively with employers on site using their facilities. They purchase delivery of underpinning knowledge courses (technical certificates) during normal term times from the college providers that are members of the Sussex Engineering Sector Alliance. Their consid-

erable experience and expertise in adapting flexibly to an employer's needs enables them to provide an agile response to new technological challenges.

### The learners involved are:

- City College Brighton is primarily a full time college for 16 to 18 year olds, but also deliver Foundation Degree courses in conjunction with Brighton University.
- Central Sussex College has a wide portfolio of full time, part time, short courses, work based learning and a highly successful Engineering Higher Education delivery where 120 employed students participate annually in HNC and HND courses on a modularised basis to allow access during times that compliment the working ethos of the companies.
- Northbrook College are very much in the same category as above but also deliver 14 to 19 Diplomas and Foundation Degree.
- SIGTA, EDF Ltd and VT Training is very much the private providers employer engagement arm of the network partnership.

### The critical issues are:

- There is a lack of confidence that is preventing investment in staff and development of the business.
- Lack of orders, high material costs and the rapid change in the diversity of the industry means they are required to be highly competitive and reactive to market changes.

## THE PLANNING BEHIND THE KTEN

### The summary action plan:

- The project had an action plan to develop and deliver a range of opportunities that would aid the industry in a reactive and real way. This was done by offering;
  - Full range of skills development routes for employees from Level 1 to Foundation Degrees.
  - Skills/Training Needs Analysis service for employers.
  - Offer aid in recruitment of Apprentices and experienced staff for employers.
  - Management of Apprenticeship and training frameworks.

Design and delivery of bespoke courses to meet the needs of local employers.

A limited specialist range of Consultancy services is also currently offered.

Help in the access of grants and funding to allow employers to access relevant training in 'bit size' courses, meeting their immediate needs quickly.

Hosting networking and joint training events.

- The use of the Skill for Technology initiative and Lean Working training was then used to bring the employers/ companies together.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

The 'skills for technology' initiative has been introduced to employers in an extended area by partnering with PERA Innovations and STFC (Science & Technology Facilities Council). It has enabled us to carry out Training Needs Analysis on SMEs and offer them heavily subsidised and in some cases, FOC short courses that don't require certification or awards. (Although this training has to be accredited by a 'Recognised Professional Body').

Areas have also been identified areas where the development on bespoke courses is required. Currently we have secured funding for the development of two/three courses. These are being developed by college lecturers in partnership with commercial industrial companies, using their equipment and offered to supply chain members.

The employer network also identified their need to work more effectively and efficiently to maximise their competitiveness and reduce costs and turn around times.

A series of 'Lean Working' awareness training days were established where several company representatives have been brought together to share their expertise in solving common problems. This has resulted in us setting up a Business Improvement Team which is starting to deliver BIT training and qualifications to a number of organisations in the South East region.

Supporting events have also been delivered, including breakfast knowledge exchange presentations, the 'Fast Track' event at the K2 centre in Crawley. This event brought together 60 local companies to allow them to show case their company and network with others. Prior to the opening of this event I gave a presentation to the company representatives and members of the press (including ITN Meridian News and BBC Southern News). This outlined the KTEN project as well as World Skills events and our Skill for Technology project

### Impact and Key Lessons Learned:

The project partners have had to rethink the way in which they analyse a customers training needs and

develop training and courses to fit there need, rather than just offering what is available at the time. The development of bespoke training has to be delivered to suit the working patterns of the business and not expect them to fit in with the traditional college time scales.

This has also lead to training providers partnering with commercial organisations and suppliers in developing courses that not only meet their customer's needs but can also be offered to colleges learners and companies to enhance their skills base, but also allow them to take advantage of other funding streams that have been realised by Engineering Prospects.

The College's core learners have been able to benefit from an extended range of training opportunities that fall outside of what would normally be available either within the framework funding or the normal college prospectus. For example, HNC student scan study separate unit outcomes additional to those within their specialist subjects. This allows them to study areas that reflect the changes within their companies needs.

For those training within an Apprenticeship Framework, it enables specialist units of training to be delivered that currently aren't funded within WBL or Train 2 Gain funding.

By working with commercial trainers and equipment suppliers to develop specialist training units it has given our companies the opportunity to use current state of the art equipment an gain the exact industrial experiences required by their employers.

The Fast Track event gave a unique opportunity for the Engineering industry to show case them selves to the local community as well as potential customers and suppliers. This gave a realistic chance for networking and sharing knowledge which would not usually happen within their normal working environment.

Additionally, more of our companies are now look at working smarter and leaner by taking on board BIT training for the organisation, in readiness to meet the challenges as we move out of recession.

### Case studies from the partners:

- Central Sussex College and Deltatechix:

Development of a level 3 short course for Electro, Pneumatic and Hydraulic Systems and Devices.

To support companies that require training in maintenance, inspection, testing & fault-finding. Delivered as two, 2-day (15 hour) courses, either separately or as a combination.

Summaries provided by the partners are below:

- Central Sussex College and Edwards High Vacuum in association with Ben Pickstock Associates Ltd:

Development of a series of level 4 short course for Vacuum Technology and Vacuum Systems.

The proposal relates to an alignment of Vacuum Technology training provided by Edwards Ltd (Vacuum Pump Manufacturers) and the Vacuum Systems NQF

level 4 training provided by Central Sussex College.

Since its inception in 1954, Edwards Technical Training Centre in Crawley has provided a selection of short courses to serve the continuing educational needs of a broad spectrum of vacuum and semiconductor equipment users in industrial, research and educational establishments.

Over 20,000 people have attended courses during this period. Vacuum and semiconductor technology is continually advancing in terms of equipment availability and performance, and in the scope and sophistication of its applications.

Courses are being constantly revised to include the latest developments in vacuum, whilst ensuring that course participants receive an adequate theoretical and practical foundation in the basic technology principles. There are 3 regularly scheduled courses (Practical Vacuum Technology, XDS maintenance & Vacuum Maintenance).

Edwards Ltd, formerly known as BOC Edwards, was sold as part of Linde's, (German Gas company), acquisition of BOC in 2006. As a result Edwards's main HQ and manufacturing base had to relocate from their site at Crawley. Efforts were made to find a suitable location for the Vacuum Training Centre at one of the other manufacturing bases in Sussex, without success.

In May 2008 Edwards outsourced the management of its Vacuum Training Courses to an external training company, Ben Pickstock Associates Ltd. Along with the re-location issue, and a desire by BPA Ltd to update and promote the current courses, an approach was made to Central Sussex College, bearing in mind its long-standing involvement in running Vacuum System Courses and knowledge of local industry. It was also recognised by BPA Ltd that although Edwards based courses had run successfully for many years they were not accredited to any formal body.

Following a series of meetings between the parties, (BPA Ltd & CSC), it is agreed that a business partnership would prove beneficial to all and especially to the recipients of the training. Taking into consideration the Vacuum System course held at CSC, BPA Ltd will provide additional expertise, along with a range of vacuum-related equipment used for teaching purposes. In addition the partnership will assist in developing a relationship with Edwards Ltd resulting in access to leading edge technology and expertise.

The financial support requested will be used for development work which will enable the current Edwards's courses to become aligned with accreditation requirements.

The Edwards courses which will require to be aligned for accreditation are:

Practical Vacuum Technology Course  
 Various Vacuum Maintenance Course (3no)  
 Good Vacuum Practice  
 Practical Leak Detection  
 Vacuum System Design

## THE FUTURE

The development work that has taken place during the KTEN project is only now coming into fruition.

The courses under development will start to roll out and new courses are being lined up for funding grants and then turning them into reality.

Many companies are now looking forward to taking advantage of the lean working and BIT training now being offered, as well having the opportunity to undergo a Training Needs Analysis.

### • Measuring impact; key facts and figures:

The impact of working with PERA and STFC has enabled us to access the £865000 of SEEDA/ESF funding to aid the delivery and development of industry specific training which will significantly improve the company's competitiveness and impact on their bottom line.

Through the Engineering Prospects extended network I believe we are now reaching in excess of an additional 300 engineering businesses within the South East Region, as well as new companies nationally through the BIT programme.

This has meant that those engaged in STEM activities have additional ways of accessing the training that meets their needs, when they want it, rather than being restricted to specific college time tabling.

Training providers work more closely with employers in developing training programmes that meet their specific need rather than the need of the awarding bodies and funding agencies. Also the networking events have built new working relationships that are benefiting those companies involved. This also enables them to share training and business development.

For colleges, it has meant a rethink in the way they time table for the future. For example, at Central Sussex College, these KTEN and Skill for Technology programmes are being included in next year's business planning and departmental delivery.

The way in which we are now working has meant that more commercial organisations now want to work with us to develop future products.

The impact on delivery quality has yet to be measured, but is included in the colleges QA programme and this will be measured as the programme grows. But as much of this is building on past good practice, it is predicted that the quality in all aspects will be enhanced.

In respects to increased opportunities to create new jobs, this has been masked by the current economic climate. But it has enabled companies to realign their business and buffer the effects of recent times.





## INTRODUCTION TO THE KTEN:

### The College and the Partnership

Doncaster, Sheffield and Wakefield Colleges are all large, general FE Colleges delivering a broad spectrum of programmes across all FE levels. Similarly they are all mixed economy Colleges delivering a range of HE level qualifications funded either directly from HEFCE or through franchise arrangements with university partners. All are engaged in the delivery of vocational and work based qualifications with a strong apprenticeship base and active employer engagement activity.

Although initially three separate project proposals, the similarity in aims and objectives brought all three institutions together into a partnership in the KTEs project to:

Create the necessary capability/model of good practice in the partner FE Colleges in order that they play a more comprehensive role in the provision of knowledge and technology transfer/exchange solutions with business and industry.

Through the collaboration of the three participating Colleges, create a branded knowledge transfer and exchange hub model.

Building on the knowledge and experience of developing and delivering Knowledge Transfer partnerships (KTP), the project involved College academic staff building knowledge transfer capability and competence.

#### The critical issues are:

- Whilst FE colleges are engaged in Knowledge Transfer in various forms, however, the specific uptake of KTP programmes by FE colleges, since they became eligible to participate in the scheme in 2003, has been very low not only in Yorkshire but also nationally.
- The KTEN project is focussed on addressing the critical issue of KTP participation and increasing the competence of staff to participate and deliver Knowledge Transfer.

## THE PLANNING BEHIND THE KTEN

#### The four project phases were:

- Mapping Knowledge Transfer capability across the partner Colleges.
- Building internal Knowledge Transfer capacity within the staff of the partner Colleges through the delivery of training and staff CPD with an initial focus on KTP.
- Development of the Knowledge Transfer and Exchange Hub brand and direct marketing of Knowledge Transfer and KTP, in particular to businesses.
- The development and delivery of KTP programmes by FE to businesses.

#### The catalyst for partnership:

Whilst partner FE Colleges and the wider FE community already undertake Knowledge Transfer activity, the majority of this is within the context of staff training and development rather than the direct application of the knowledge and expertise in FE to business operations.

For a significant number of staff direct Knowledge Transfer activity is not familiar territory requiring personal development.

Other institutional demands limit the capacity of staff to develop Knowledge Transfer activities and may also lead to conflicting priority if the level of Knowledge Transfer activity rises.

Yorkshire Knowledge Transfer and Exchange Hub project brought together, initially, the separate initiatives of the three partner Colleges. All the partners recognised the need to increase the nature and level of knowledge transfer between FE, business and industry and the need to build capacity and capability within the institutions to promote and support this increased activity level.

As well as the common themes and goals across the institutions' initial proposals, working together was the catalyst which provided the opportunity to create a critical mass and a more comprehensive Knowledge Transfer offering from FE to business and industry.

The advantage of the partnership was that a model for college collaboration in Knowledge Transfer and the development of common resources could be piloted with a view to creating a more visible network through which more companies could access college knowledge and expertise more efficiently.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

- Within the project, Knowledge Transfer occurs at two levels:

Initially, between staff within the College partners through training events, CPD and the development of a Knowledge Transfer Toolkit;

and then through the development of KTP programmes to business and industry. Through the KTP projects, staff are directly involved in applying their knowledge and expertise to improving the operation of one or more aspects of the partner business.

This, however, is not a one way street. It also provides for academic staff to learn from the businesses and bring that learning back into the institution's teaching and learning. Academic staff will learn directly from the businesses as well as from the effects of applying their knowledge and expertise within the business environment.

### Impact and Key Lessons Learned:

- Lessons learned by the partners:

The support provided by the KTENs project has facilitated increased activity to develop more participation in KTP programmes by the FE partners. The work undertaken, including the staff development sessions, has highlighted the level of support required to establish and grow Knowledge Transfer activity in FE and led to the development of the Hub model.

- Impact of KTT on the College(s):

Prior to the KTENs activity, only Doncaster College had developed and delivered KTP programmes, with little or no consideration given to them by other colleges.

The participation of Doncaster College was due to the background and experience of a senior manager who had previously been a KTP manager in HE rather than an organic participation by the College.

As a result of the KTENs project, both Sheffield and Wakefield Colleges are actively pursuing the development of KTP programmes and the project has also led to a significant widening of the network of Yorkshire and Humberside colleges engaging with KTP.

- The project has highlighted:

The need and level of support required for Yorkshire and Humberside colleges to become more Knowledge Transfer active and Knowledge transfer competent.

The benefit of colleges joining forces through a Knowledge Transfer network to provide as full a range of Knowledge Transfer services as possible to businesses.

The advantage of pooled resources and the benefit of a brokerage service for Knowledge Transfer in FE.

Whilst the project has highlighted how broad the need is to develop Knowledge Transfer capacity as a pilot

project, a concentration on a smaller number of staff working more closely with them to identify a potential partner and develop a KTP programme, may have led more quickly to new KTP programmes being established.

This would have detracted from the long term capacity build and the development of the Hub model and support package.

Direct engagement with, and strong support of, academic staff is critical to the success of this, and follow-on projects, in increasing the engagement with, and increase in, Knowledge Transfer activity in FE.

### Case studies from the partners:

- The Backstage Academy:

The creative industry is a rapidly expanding sector which requires world class technical expertise. The live music and cultural sector contributes over £4 billion to the economy and continues to grow requiring 30,000 new technical staff by 2020.

As performers become more and more demanding, and the public demand more spectacular entertainment, the demand for higher technical skills and competencies grows.

This is the challenge that faces the industry and training and education sector. The UK's arts and performance sector enjoys an international reputation for innovation and dynamism but need the skilled staff to maintain and enhance this position.

The Backstage Academy brings together a range of partners including Doncaster and Wakefield Colleges and industry led by Litestructures, a world leader in the design and manufacture of modular aluminium architecture for exhibition, entertainment and performance venues, provides cutting edge facilities and accelerate skills development in the performance and related sectors.

The academy's client base ranges from the 14 – 19 creative diploma, NEETS and modern apprentices, through to foundation degree and the professional / CPD market who will be delivered to through the project's FE College partners.

The Backstage Academy draws strength from its blend of industry and close to market skills and technical experience with the training and teaching know-how of further education institutions with a reputation for excellence. This mix of skills and experience endows the Backstage Academy with a unique advantage to deliver a range of educational training programmes that reflect what the industry needs.

In embracing partnership, The Backstage Academy recognises that each of the partners has something to contribute and something to gain. It provides a vibrant environment where academic staff and educators can update and refresh their technical skills and understanding of sector requirements while at the same time an industry which has a history of "resourceful amateurism" and a laissez-faire approach to skills

development and CPD can benefit from the introduction of structured and accredited training pathways.

The Backstage Academy provides the facilities for industry and academic staff to work alongside each other delivering a training and development training to current and aspiring backstage personnel. Better still, will be in a real world environment allowing students to showcase their skills in a live performance or in the arena sized rehearsal facilities which attracts some of the biggest international names in the entertainments industry.

The Backstage Academy partnership embraces the essence of the KTENs project providing a fertile environment through which knowledge is transferred and exchanged between industry and the academic sector.

KTENs project is assisting the partner FE colleges to play a more comprehensive role in the provision of knowledge and technology transfer / exchange solutions with business and industry.

Through this support, a Knowledge Transfer Partnership has been formed to develop a KTP programme between Litestructures and Doncaster College to develop and deliver the training and skills facilities for the Backstage Academy along with the training programmes. The KTEN project is supporting the development of the partnership along with the identification of skills and knowledge to be transferred and the development of additional funding to deliver the Backstage Academy vision.

## THE FUTURE

### The next steps:

The work commenced under the KTENs project has expanded and will continue, initially under additional funding provided by the Yorkshire and Humberside Regional Development Agency, Yorkshire Forward, and the Yorkshire and Humber East Lifelong Learning Network (see below).

The network of participating colleges has grown to forty through the engagement of all four Yorkshire and Humberside Lifelong Learning Networks. Post-funding, the model being developed for the operation of the Hub will enable it to be self-sustaining financially.

The action plan, as well as encompassing four distinct activities/phases, provided for continuing development of the concept post project and the sustainability of the activity.

Also within the action plan is the development of the model for the Hub and the shared resources to promote Knowledge Transfer.

The development of a viable Hub model allows for the future expansion of the network through the provision of support to other FE colleges increasing the scope of Knowledge Transfer activity.

### Measuring impact; key facts and figures:

(As indicated above, the work under the KTENs project has been a catalyst for additional funding and a widening of the college networks participating.)

- For the College, additional income leveraged:

Yorkshire Forward: £12,500.00  
(to expand the network across the region)

Yorkshire and Humber East Lifelong Learning Network: £40,000.00 (to support further work with the eight FE College members of that network.)

Whilst the work has identified a number of potential KTP programmes, more have yet to reach the stage of proposals being submitted for funding. Assuming one third of the twelve potential programmes results in a successful application for funding that would represent an additional income of £300,000.00 to the partner Colleges.

- Estimation of STEM staff engaged in Knowledge Transfer:

To date thirty six staff from partner institutions have attended development or information sessions to increase awareness of Knowledge Transfer, particularly KTP.

- Estimation of new STEM businesses engaged:

Forty one people representing twenty seven employers have attended Knowledge Transfer briefing sessions and events;

with twelve potential KTP programmes being identified with eight separate employers.

Development work is now being undertaken to bring these forward as proposals for funding, accruing future benefits for both academic and business partners.



## INTRODUCTION TO THE KTEN: The College and the Partnership

Exeter College is a large general Tertiary College located on two major city centre sites with two major vocational centres in Sowton (Construction) and Marsh Barton (Motor Vehicle). The College also delivers education and training in a variety of locations within the Devon and Exeter region.

- The College plays a vital role in the delivery of programmes leading to vocational, professional and academic qualifications at all levels as well as a number of personal and community development programmes.
- The College is committed to engaging with all employers and developing knowledge exchange activity across Exeter and the Heart of Devon with a view to driving up participation and success in employee's training.
- To this end, Exeter College proactively markets existing provision, in particular apprenticeships and Train to Gain, but additionally works with employers to develop new training opportunities. To support this activity a number of actions are being taken forward, including:

Strategic partnerships, for instance with the Sector Skills Council GoSkills, are being leveraged to unlock sector wide skills gaps, particularly in LSC/local priority areas.

Flagship partnerships with large employers, such as Flybe, are being used as catalysts for employer engagement work.

### The College is working with:

- Faculty of Technology- Engineering
- Air Training South West
- Bournemouth & Poole College
- Exeter University collaboration

### The critical issues are:

Shortage of appropriately skilled and qualified personnel within the Aerospace Engineering Maintenance Repair Overhaul sector.

Previously ex-service personnel have covered the employment demand for this area, but this supply is now found to be diminishing and new sources of highly trained engineers are required.

Initial estimates from employers suggest a minimum of 140 licensed engineers are required per year to fulfil current demand.

## THE PLANNING BEHIND THE KTEN

### The summary action plan:

The purpose and aim of the action plan was to establish knowledge transfer capability in Exeter College - Aviation Engineering through the following objectives:

- To develop knowledge transfer capability within Exeter College in aviation engineering.
- To establish a specialist network and create linkages that support knowledge and technology exchange.
- To carry out dissemination events and activities.

### The catalyst for the partnership:

Exeter College and Flybe have worked in partnership with a number of awarding bodies to develop a Aerospace Engineering training programme for young people, which leads to a Foundation Degree. This new, exciting opportunity allows candidates to gain the qualifications and experience needed to become a licensed engineer through the achievement of EASA Part 66. It is a 4-year programme where the candidate will gain the skills and competencies in diagnostic manufacturing and aircraft maintenance.

This qualification is delivered by the Faculty of Engineering at Exeter College, led by Simon Friend the Head of Technology and his team of Aviation specialist lecturers.

The programme was launched in September 2008 and 33 candidates embarked on this programme and are making excellent progress to date.

In addition to the apprenticeship and the foundation degree development there is a clear demand for modular training to be delivered for industry. It is recognised that there is a need to extend the current offer and develop an Aviation Engineering Centre at Exeter College, a hub for knowledge transfer activity; to support the current and future needs of employers.

This was the basis for our Knowledge Transfer & Exchange Node. Therefore, whilst this training programme is doing much to start to address the skills gap, the partnership was formed to ensure that a Knowledge Transfer Node could help to up-skill and re-skill current aerospace workforce personnel and this is the key target group.



## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

- On implementation of a number of initial activities derived from the action plan it became apparent that similar projects were being run in this area and it would be beneficial to collaborate with these projects and transferring /exchanging knowledge between the partners.
- A bespoke site for staff and project working group to access has been set up on College Portal as a forum for exchanging ideas and holding information & material.
- The node is still being developed and will consist of a web based bank of resources/VLE, which will contain different layers of access for stakeholders based around their specific organisational and individual requirements.

### Impact and Key Lessons Learned:

#### Lessons learned by the partners:

It became apparent that the magnitude of the task undertaken was highly ambitious given the project timelines. Once it had been identified that similar initiatives were being run in parallel in the South West Region, a decision was made that far greater impact could be achieved through collaboration as opposed to running a stand alone project. Therefore the project activities have evolved into full collaboration to achieve the outcomes.

#### Impact of KTT activity on the College:

The development of the Aerospace Engineering College Portal has enabled learners to access and share technical training sessions and resources. The web based nature of the portal is such that learners are able to access resources externally.

- The Portal also contains career and curriculum progression pathways.
- Through the VLE there are enhanced opportunities to use innovative teaching and learning tools that can be applied in the aviation and wider engineering sectors.
- A schedule is in place to enable both employers and individuals to subscribe to the web-based VLE in the coming months.
- It is also anticipated that the resource will support wider engineering sectors through the Science and Maths modules which will go up to HE level.

## THE FUTURE

### The next steps:

- Get the transfer 'node' model fully functional to allow outside agencies to access VLE via a subscription route with varying access levels. The collaboration partners would have access without subscription and be able to access and transfer knowledge freely.
- Continued collaboration to possibly secure additional funding for further development of the VLE project to wider stakeholder group.

### Measuring impact; key facts and figures:

#### Impact on the College:

- Collaboration led Exeter College to pro-actively engage with a wider project group than had been anticipated in the initial start up phase. Whilst this has been a very positive outcome, it has led to a change of emphasis and direction with regard to the original project aims.
- All parties are now in full agreement that all aspects of the individual projects should be consolidated into one major knowledge transfer and exchange node, which will be facilitated through a web-based virtual learning environment.
- The College is hopeful that this collaborative approach may also attract additional funding.

#### Impact on teaching and learning:

- Staff now utilise the portal for their teaching and learning resources and also freely up-load their own material for use by colleagues and learners.
- Learners are able to access a wide range and style of resources, which are becoming further enhanced through the addition of material which is being developed through partner collaboration.
- It is expected that the resource bank will continue to be further enhanced in the future in response to learner and employer engagement and feedback.

#### New jobs created as a result of KTT activity:

- At the beginning of the project a questionnaire was distributed to a broad range of airlines and aerospace engineering companies to gather feedback on their specific technical; skills shortages and training needs.
- This highlighted very clearly that there was a major skills shortage in all technical training subject areas.
- In addition to this project, Exeter College will aim to explore how we may support these organisations in the future.



GATESHEAD COLLEGE

## INTRODUCTION TO THE KTEN: The College and the Partnership

Gateshead College is a large successful, ambitious college with in the region of 10,000 full and part time students studying a range of vocational and academic programmes, from entry to post-graduate level. Gateshead College's mission is to enable individuals, businesses and organisations to succeed through learning and skills.

In 2008, the College completed its £60 million property strategy to create a new world class campus and moved into the Baltic Campus on the Baltic Business Quarter and the Skills Academy for Construction on Team Valley.

The College also has an Academy for Sport based at Gateshead International Stadium (completed in 2006), a Skills Academy for Automotive, Engineering, Manufacturing and Logistics (completed in 2005) and a Skills Academy for Construction, which opened in 2008.

At its Ofsted Inspection in November 2008, Gateshead College was awarded Grade 1 Outstanding for every category. This puts Gateshead College amongst the top colleges in the country. Key highlights from the Ofsted inspection include:

We are now one of the top Colleges in the country.

We are seen as national leaders in Teaching and Learning practice and in the way we support our teachers to become excellent in their profession.

Our Learning resources/facilities and accommodation were described as 'fantastic'.

Our support and guidance is outstanding, some of the best the inspection team had seen.

We are seen as an extremely inclusive college with outstanding levels of social inclusion and response to equality and diversity.

We are making a significant contribution to the social and economic regeneration of the region.

Our employer engagement is outstanding

Our students are proud to study at Gateshead College

### The consultancy covered by KTEN has targeted:

In late 2007 and early 2008 Gateshead College embarked on an ambitious project to develop a Foundation degree in Digital Forensics.

Through employer engagement activities, necessary course and training were established by working with several key employers and agencies within the North East and national specialists.

The College is working with, Northumberland Police, Sapphire Technologies, 3G Forensics, Guidance Software, Teesside University, Sunderland University, NEFF Northeast Fraud Forum (over 200 North East companies as members), One North East

The critical issues are:

- Staff Skills and Development & Training
- Curriculum Development
- Cost of Equipment/Software
- The development of a Specialist Lab Facility
- Model of Delivery
- Employer Engagement/Recruitment

## THE PLANNING BEHIND THE KTEN

The aim of the project is to draw on the knowledge and experience of businesses (NEFF members), Gateshead College and the University of Sunderland to develop a means to transfer and share knowledge with other businesses/partners. Key activities included:

- Designing and developing a method of sharing best practice in a timely and responsive manner across a network of partner businesses.
- Bidding for funding from One North East (the Regional Development Agency) to develop a Digital Forensics Lab within Gateshead College. This funding would enable the college to offer specialist training to employers and learners, enabling access to this specialist facility to its partners, NEFF, local universities and employers both regionally and nationally
- The use of this lab as a shared resource would facilitate the growth and development of relationships with employers and other educational institutions, promoting the sharing and transfer of knowledge between education and industry.

### The catalyst for the partnership:

The catalyst for this was the research that took place within the development of the Foundation Degree. It became increasing evident when talking to employers and business partners that within the North East there is a clear realisation of a skills shortage within the area of digital forensics.

The key factor that contributed to the success of this project was the secondment of a member of teaching staff, in this case Iain Arthurs to liaise and work directly with employers on development of the Foundation Degree in Digital Forensics. Gateshead College applied for and was granted funding through the NEF IFS scheme.

This funding allowed Iain Arthurs to access work placement opportunities with Northumberland Police and Sapphire Technologies. This type of work placement enables teaching staff and employers to learn from each other, an invaluable experience that benefits all concerned.

This initiative allowed employers to articulate the knowledge, skills and understanding they require for their current and future employees. This dialogue contributed directly to the design and development of the Foundation Degree in Digital Forensics. Key learning points for academic staff engaged in the secondment included:

- Understanding of Digital Investigation
- Knowledge of Security and Integrity of Systems and Networks
- Understanding of the Law
- Security of the Internet (e-commerce)
- Work based Projects and Planning

The Foundation Degree in Digital Forensics was developed in conjunction with Northumberland Police and Sapphire Technologies and validated by Sunderland University in July 2008.

The first student intake commenced September 2008; all candidates are working within the ICT Industry. These learners are all 19+ and wish to develop a range of higher skills in the area of security and digital forensics, they aspire to either change career (reskill) or further develop the skills they already have (upskill).

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

The College actively engaged with employers to ensure knowledge transfer was not only a key factor within the development of the degree but should be embedded into the delivery of the course.

Course content would be enriched and enhanced through the integration of Guest Speakers/Lectures/Masterclasses into the delivery of the degree programme. The plan is to embed these sessions into the College VLE and therefore open up the opportunities for staff, learners and employers to access and engage in all aspects of this training programme and speak to experts in the field.

For example on the 26th February 2009, a Masterclass was held within Gateshead College with experts coming together to present to learners, lecturers and employers, on the topic of deception and its link to fraud.

Within workshops, facilitators actively promote the sharing of experiences and best practice, use of case studies are very helpful to learners and employers as this aids understanding and knowledge transfer.

Another event in May was to launch the new Digital Forensics lab jointly funded by One North East and the College. Universities, local partners and employers will be attending the opening of the facility where students and staff will be demonstrating use of the specialist kit. Specialist speakers are invited to talk about the advent and use of technology within the area of Cyber Crime.

The college is the first college in the country to take out the Educational Software License that will be used within the Digital Forensics lab. The company Guidance Software is actively encouraging other universities and institutions to also attend this event.

KTENS funding has enabled the College to undertake work that would not have been carried out without the support of this funding. KTENS funding has enabled collaboration and knowledge transfer between the college and employers resulting in the updating of skills, sharing of industry best practice and the design and delivery of curriculum. The developments enhance the learners' experience and provide relevant industry standard skills in line with the Leitch Skills agenda.

The funding has enabled a number of achievements and outcomes which include:

- Increased engagement with employers.
- Greater collaboration and Knowledge Transfer between employers especially the North East Fraud Forum and the College.
- Established increased links with employers bringing their expertise into the classroom through resource development.

Enhance knowledge and understanding of teaching staff related to industrial standards & requirements. These developments enhance the learners' experience through enrichment activities- for example master classes delivered by industry specialists.

Development of delivery mechanisms and methods which meet the needs of both employer and learner needs.

### Impact and Key Lessons Learned:

- Lessons learned by the partners:

Knowledge transfer is a key factor in the development of curriculum content now and in the future. The expertise of industry engaging with educational establishments is an imperative if the courses/training on offer are to meet the needs of industry. The college is currently engaged in the development of a Foundation Degree in Fraud Management. This degree has transpired purely through the development of digital forensics, this initiative has enabled networks to be established and curriculum to be developed through links with the NEFF (North East Fraud Forum) and the resulting collaboration activities.

Through discussion with NEFF, the College agreed to work collaboratively on the development of accredited

training programmes around the masterclasses. In partnership with Sunderland University and key specialists from the NEFF, the programme is being currently put together and will be accredited later this year.

The delivery strategy for this course will be for the college to employ experts within their field of fraud to deliver each individual module. To enhance the knowledge transfer between students /lecturers and industry professionals, the college is setting up a VLE in which everyone will be able to interact with each other. This will include:

Videos of Lectures  
Interactive Forums  
Email  
Discussion Boards

By engaging in this project it has enabled the College to proactively work with Industry in development of a whole new curriculum, this is an exciting and fabulous opportunity for all concerned.

Very positive feedback has been received from employers and developments to date are seen as just the beginning of the College's curriculum programme in the area of Fraud and Digital Forensics.

## THE FUTURE

### The next steps:

- Secondments.
- Employer liaison for increased knowledge transfer and collaboration; and network working.
- Curriculum design and development.
- Validation towards educational credits (accreditation).
- Further VLE development, making learning accessible to a wider audience at a time and place that suits them best. Knowledge can therefore be shared and disseminated to a wider network of employers and learners. The use of an engaging, interactive medium, for example allowing learners and employers alike to engage in meaningful discussions, is an important tool in extending and enhancing knowledge transfer.
- Further networking and travel. Expand the network to outside the region and further extend knowledge sharing throughout the UK.
- Enable lecturers within the College to engage and develop knowledge of the latest industrial skills and practices.
- Enhance and enrich the learners' experience through collaboration and relevant industrial knowledge and skills.

### Measuring impact; key facts and figures:

- Impact on the College and the partners, including additional income leveraged:

The collaboration with NEFF supported by funding from the KTENS project enabled the College to successfully apply for £75,000 of RDA (ONE North East) funding.

The funding received has enabled the college to develop the only collaborative regional training centre in Digital fraud prevention and detection in the North East.

This facility has been developed to provide employers, security firms, the police, schools and individuals with a training facility complete with the latest technology that they can access and share through a collaborative training programme that brings together industry, public sector and education.

The specialist security and Digital Forensics Lab simulates the digital fraud protection environment within the fraud protection industry and law enforcement, including Northumbria Police and Saphire.

Industry standard equipment within the dedicated lab includes Tableau Kit and other write blockers, and Cisco equipment, 10 dedicated high specification PC's complete with EnCase® Forensic software, Cisco software, FTK software, Integrated Computer Forensics software & Virtual Forensic Computer software. This is the most up-to-date and industry standard equipment currently available.

Development of one new foundation degree on Digital Forensics; and a second under development in Fraud Management, both of which are included in the curriculum offer in September 2009.

The knowledge gained from the Knowledge transfer will enhance and enrich the experience of learners, make a difference to learning. The development of skills demanded by industry will provide motivation, while the Digital Forensics Lab will add enthusiasm and improve attitudes which will impact on teaching and learning of Digital Forensics through use of industry standard kit and equipment.

The College is also putting together a full cost training offer around this whole curriculum development, the first of which is planned to start in June 2009, a week's training programme in use of EnCase® Forensics Software.

Increased employer engagement in the design and development of new curriculum.

Specialist masterclasses hosted by Gateshead College delivered by specialists from industry.

Increased reputation of the College, perceived as a key collaborative partner on projects and new initiatives.

- Estimation of impact on STEM Learners, the curriculum and progression routes:

Currently, seven learners on the Foundation Degree for Digital Forensics, with a waiting list of six learners wanting to enrol for next year.

It is difficult to evaluate the project in terms of learners engaged as the key focus to date has been the development of the curriculum. The next stage is to market and promote the curriculum thus engaging with learners. Currently, seven learners are studying on the Foundation Degree for Digital Forensics

The modules developed following the project, and those which will continue to be developed as a result of this



project, match the demand of STEM employers. As a result of developing relevant industry relevant skills, College learners will have skills required by employers which will help to ensure employment and progression.

The project has enabled the college to work with employers who use digital technology and to share industry relevant skills and ideas. As a result the industry relevant training the College has developed is more up to date, relevant and enjoyable for the learners. Following the project, a curriculum has been developed which reflects the true requirements of STEM employers, rather than simply the perceived needs.

A 'Digital Academy' is currently being developed across Gateshead College. It will encompass all curriculum areas and embrace the use of design, creativity and technology; embedding these features into the core curriculum offer at all levels. These will take the form of enrichments, enhancing the learner experience and enabling effective engagement with employers. The academy will enable industry, employers and education to engage in discussions and generate networks around the future development of technology and its impact on business working practices and the new skills development required to operate effectively in global markets.

This curriculum area was only on offer as a full cost model and targeted at employees within the Industry. Through the development of both Digital Forensics and Fraud Management degrees, the College now offers an accredited route which did not previously exist. The College is working with Sunderland University to accredit specialist units so that it can make this training more accessible to employees and employers from all sectors that use technology in their daily business activities. Many of whom would benefit from some level of training in area of fraud prevention; especially as Cyber crime is becoming more prevalent.

- **Estimation of new STEM staff engaged in Knowledge Transfer:**

Currently, seven learners on the Foundation Degree for Digital Forensics, with a waiting list of six learners wanting to enrol for next year.

The College is now in the process of advertising for new members of staff to deliver on both the Foundation Degree in Digital Forensic and the Foundation Degree in Fraud Management. The College expects to employ up to six new members of staff because of these developments.

In the Foundation Degree in Fraud Management, four learners are enrolled with currently four learners awaiting interview.

- **Estimation of STEM businesses engaged:**

- The College works and engages with businesses to develop new curriculum in line with employer demand. Those attending the event on 26 January 2009 were:

CE Electric UK  
Northumbria Police  
Norwich Union Life  
Gateshead Council  
Brewin Dolphin

Unified Software Ltd  
Sunderland Internal Audit Services  
Lloyds TSB  
NEFF  
South Tyneside CVS

Tait and Walker  
Sunderland AFC  
RPMI  
Marriot Hotel  
Clive Owen & Co  
Teesside University  
NHS CFSMS  
National Audit Office  
Northumberland County Council  
Standard Life Group  
Watson Burton  
RBS Insurance  
DAAC  
Northumbrian Water Ltd  
RSM Bentley Jennison  
Northpoint  
Shepherd Construction Ltd

Newcastle Building Society  
Nexus  
HBOS  
Durham & Tees Audit Consortium  
The Innovation Group plc  
Watson and Burton  
Your Move  
Newcastle City Council  
Ask Solutions  
SCDEA e-crime Unit  
Equipax plc  
One Northeast  
Sunderland University  
Gentoo Group  
South Tyneside Council  
Teceris  
B&Q Plc

- Employer feedback from the 26 January event was extremely positive, including:
- "We are only too pleased to help the college in developing the learner's experience."
- "Our company would very much like to develop links with both the college and its learners, to develop any future curriculum offer."
- "This has been an outstanding event, which has been very informative."

Overall, there are 60 organisations engaged on various activities.

As a result of the college working with local partners and employers, a large financial services employer has approached the college to develop a training package for its employees. This would only have been made possible because of this project and the College's strategy to engage with employers and develop new curriculum in line with employers' needs

- Estimation of increase in business awareness of Knowledge Transfer:

When the college started this initiative it did not have a curriculum offer in the area of digital forensics or fraud. As a consequence of this project the college is now actively working with 60 employers within the region on a range of developments, including curriculum design and training.

As a consequence of the project, new specialist Associate Lecturing staff have been attracted to the college. Some of these staff have key roles within local industry or public services and will be delivering College courses in the future. This is a key model that is being developed across a range of specialist programmes; ensuring courses and content are relevant, current to industry standards and provide value to staff and learners.

As a delivery pattern this has the potential to act as a model of best practice, bringing together current industry expertise alongside educational specialists in a highly effective way.

## INTRODUCTION TO THE KTEN: The College and the Partnership

Hartlepool College is a medium sized Further Education college based in the North East of England. The College has a well established engineering facility which delivers courses from level 1 to level 5 (Foundation Degree).

Training is funded through mainstream further education (LSC), apprenticeships and Higher Education (in partnership with the University of Teesside).

The nearby engineering and process industries send staff for training and meet with academic engineering staff to maintain an up-to-date and relevant curriculum that meets the industries' needs. The College's responsiveness to employers was recognised in June 2008 when it was accredited through the Quality Training Standard (QTS) with "Excellence in Engineering".

### The consultancy covered by the KTEN:

- From September 2008, the engineering division is delivering the first 14 to 19 engineering diploma in Hartlepool, in partnership with a number of secondary schools. It has emerged that there is a lack of understanding and knowledge on the part of wider school staff surrounding the engineering profession and similarly a lack of knowledge among industry about the diploma.
- The KTEN project has a number of individual outcomes (or strands) and involve a range of industry and education professionals.
- In essence the aim of the project is to complement national marketing work simultaneously being carried out in raising awareness of the importance of STEM subjects through direct intervention with school students, careers advisors and parents.
- Additionally the project will bring together like-minded industry professionals to support the 14-19 Diploma with the best quality cross sector industrial experience and lay the foundation for future development and knowledge growth.

## THE PLANNING BEHIND THE KTEN

### Strand 1:

- **Key outcome.** To produce a short video that will be issued on DVD to raise awareness of engineering as a profession – specific reference to the importance of the STEM subjects and the opportunities for apprentices and graduate engineers.

A DVD has now been produced by HCFE using contemporary music and a range of stock and specifically photographed digital images. The theme of the production is the importance of engineering to the North east of England – from the first railway to the multinational companies that call the region their 'home'.

Chartered Engineering status and apprenticeship are both specifically introduced in addition to the opportunities available locally.

- **Progress to date.** The video has already been shown to over 300 school children locally.

### Strand 2:

- **Key outcome.** A case study delivered to Engineering Diploma students but with a wider context to introduce the organisation of an engineering/manufacturing business.

This will emphasise the specific and underpinning skills required to ensure the business can function efficiently and effectively. The importance of the STEM subjects would be made clear and hence the session has wider appeal for teaching practitioners involved with maths, science, ICT and English.

- **Progress to date.** Dave Bennett, a Mechanical Engineer with British Energy (now part of the EDF group) presented to the Higher Diploma Engineering group on March 2nd 2009.

The Case Study briefly introduced the context of the organisation before progressing to explain how engineering organisations are structured and the importance of STEM subjects to their sustainability. Several school teachers and college lecturers also attended the event.

**Strand 3:**

- **Key outcome.** The second case study will build upon the themes introduced in Strand 2. Specifically it will examine Engineering Change – The British Energy Method for the Control of Safety of Modifications.

A seminar for students and teaching staff introducing how business and engineering problems are resolved technically using communication, analytical skills, expert knowledge and the consideration of economic considerations such as materials, human resource, finance to ensure a safe, timely solution which is fit for purpose is sought.

A number of Higher Diploma and National Diploma students will be encouraged to attend. A number of employers who have supported the Diploma in Hartlepool will also be invited to attend in addition to the Local Authority and National Skills Academy (Nuclear).

It is anticipated that the Case Study will lay the foundation for a successful knowledge transfer partnership that will be formalised in Strand 5.

- **Progress to date.** This strand is scheduled for 18th May and hence an update will be presented in June.

**Strand 4:**

Strand 4 will focus on bringing together teaching practitioners and career advisors from the Local Authority to provide clarity to the post 16 skills agenda including the roles and responsibilities of each of the agents involved in the delivery of engineers.

It will principally provide a unique opportunity to focus on one key issue: Raising awareness in secondary education of engineering careers and the importance of STEM graduates to UK PLC.

The majority of the visitors will be from Connexions in Hartlepool and County Durham.

- A really positive response involving nearly 30 careers advisors attending two sessions during the day and early evening. The session concentrated on the importance of learner engagement in the STEM subjects and clarified the stakeholders associated with STEM including Sector Skills Councils, National Skills Academies, cluster groups and specialist groups such as NEF.

As published on <http://news.bbc.co.uk/> in March 2009, a report by the Skills Commission 'too few teenagers in England are starting apprenticeships, partly because of poor careers guidance'. This session has therefore proved to be a timely response to the report.

**Strand 5:**

- **Key outcome.** Arising out of the activities presented in Strands 1 to 4, strand 5 seeks to establish a Knowledge and Technology Transfer Node in Hartlepool that will be willing to communicate freely across each sector (engineering industry, further and higher education, advisory services and training), with the objective of increasing the recruitment of able young people into the engineering industry.

- **Progress to date.** Looking extremely positive the following 'map' shows how a number of organisations have collaborated to date in promoting STEM and the 14-19 Agenda.

Plans are underway to form a pro-active 'Knowledge Transfer Community' committed to sharing and developing the provision, training and recruitment of young people into these key industrial sectors

**KNOWLEDGE TRANSFER****Case studies from the partners:**

- St Hilds:

A secondary school in Hartlepool St Hilds, Church of England School, has specialist status in engineering.

A recently opened STEM centre combined with a forward thinking approach to vocation and applied learning has resulted in a school keen to explore the potential of the 14-19 agenda.

## INTRODUCTION TO THE KTEN: The College and the Partnership

Hartpury and Duchy bid separately for a KTEN with projects for agrifood. These bids were developments of each college's work in the agri-food chain and reflected each college's origins as land-based colleges.

As specialist colleges, they have worked together and severally to lead developments in best practice in further education and responsiveness to employers. Most recently they have jointly delivered a CoVE in Food and Drink Technology, which has led both to be members of the National Skills Academy for Improve, the SSC.

The experience of that CoVE saw development of skills training responses from NVQ level 1 and short certification courses into higher levels of skills development including, in both cases, validation of foundation degrees in food technology/manufacturing.

The ongoing nature of that knowledge transfer at the skills level is increasingly developing demand for knowledge exchange at higher or different levels and on a more bespoke basis. Such demand does not fit neatly into the established systems and cultures of FE, but at the same time by focusing on this area of expertise allows broader reflection and application.

### The consultancy covered by the KTEN has targeted:

The aim is to embed the operation and design of KTE into Duchy and Hartpury Colleges by looking at and working with the core stakeholder groups of FE delivery and engagement staff, the agrifood sector and engagement per se.

This is with the objective of working with businesses and stakeholders to identify opportunities for mainstreaming funded activity and to identify needs.

The consultancy and training service trialled by Duchy was bespoke and not qualification based. However it could be linked to training days that are run from the college for an identified need i.e. cheese making. Cross-over employer responsive and adult learner responsive

From the outset, it was recognised that what was being attempted did not fit neatly into the timescales available. Both bids ran the end of the project through to September/October.

### The Colleges are working with:

#### CHAINS involves multiple partnerships.

- With the NEF and other KTENS. CHAINS shares with NEF and the other KTENS the need to create and disseminate best practice through meeting and sharing outcomes formally and informally.
- With the wider FE and HE sectors. Both Colleges had aligned a variety of partners for their bids including Association of Colleges (AoC), Cultiva Ltd, University of Plymouth, the Centre for Enterprise & Innovation at University of Gloucestershire, and Research, Business & Innovation, University of the West of England, Bristol. In order to share best practice and to bring clarity to the potential overlap between HE and FE KTE.
- With employers groups. Including IMPROVE SSC, National Skills Academy Food and Drink Manufacturing, Campden BRI, Cornwall Agri-Food Council, SWRDA and Business Link. In order to inform their developments.
- With the project lead colleges of Duchy and Hartpury. To empower and cascade a greater number of enthusiastic individuals internally able to engage in this agenda, as well as develop models of delivery based on the KT agenda.

### The learners involved are:

- Local business people, to identify understanding of KTE and FE's role in delivering mutual upskilling.
- Local business people, to identify needs-based solutions given the wide range of activities which fall into KTE, but potentially not recognised as such.
- Local business people to identify effectiveness of trial intervention.
- College staff to reskill in the tools and approaches to KTE and to enable effective engagement. (19+, Continuous Professional Development).

### The critical issues are:

CHAINS focuses upon business improvement and innovation within collaborative and partnership arrangements by recognising that each partner is an independent entity with mutual but distinct objectives.

Clarification of needs and language enables clear communication and successful projects. It addresses the whole chain from the point that something animate



or inanimate is grown to the point where it is bought by the end user (consumer or chef). It addresses similar chain issues in the innovation supply chain.

#### Specifically it:

- Aims to reduce confusion and misunderstanding through the simplification of the multiple and various innovation offerings among the food-related and educational supply chains.
- Addresses a false dichotomy between knowledge creation (HE and managerial) and process control (FE and skills training). Learning from the knowledge base of HE will enable the project to overcome issues and to identify the products and services where FE has innate abilities. This breaks down barriers in the innovation supply chain.

In the same way that effective supply chains pool resources and integrate, so the reduction of confusion (barriers) and institutional politics (niches, specialisations, defensive positions; collaboration versus competition) around innovation will add value.

Food chains require a range of innovation inputs, which are unlikely to be found in individual institutions. Confident partnership working by innovation suppliers mirrors that of the food chain.

The Changing Attitudes to Innovation Supply project (CHAINS) addresses issues of knowledge innovation including:

- Culture (risk versus process and other orientations)
- Organisational design (how and what FE restructures to address KTE)
- Skills (functional and team training)
- Economic drivers (funding, return, demand)

Food production is a highly specialised process and, very often, small businesses do not have knowledge of the scientific and technological processes involved in the manufacturing of a product.

This can affect a food business in many ways, from reducing the time period available to sell the product from the date it is produced, to not being able to identify problem areas that are affecting the way a product tastes.

CHAINS has been able to begin to address some of these issues, by working on an individual basis with local food businesses, surveying the agrifood sector, engaging with groups and addressing internal issues.

The Duchy team have done this by evaluating each product that is being manufactured, establishing the manufacturing process, and looking at where critical controls need to be applied. This is followed by the team identifying where the problem areas are, providing a solution, and assisting the business in applying the solution.

The Hartbury team engaged the wide sector of agrifood and commenced the transfer of best practice from HE. Both teams have addressed the need for internal cultural and processes changes.

## THE PLANNING BEHIND THE KTE

### The summary action plan:

- Time is essential to achieve the intended outputs so the project falls into three broad phases:
- Initial work with target stakeholders within the period of this report.
- Sharing of good practice within the project partnership and with NEF
- Sharing of good practice with wide stakeholder groups in the South West.
- Stage One

November: Planning and co-ordination between the prime partners; and reworking of separate action plans from bids to create a single plan

December: Initial engagement with companies and internal briefings of staff directly involved in project.

January: Duchy begins case studies with employers; and carries out initial meetings and identifies the case study businesses including: project plan, objectives, projected outcomes, performance indicators, technical / scientific / innovation needs that are impacting their progress; design qualitative questionnaire; plan Hartbury Business Network (HBN) rollout; initiate engagement of indirect staff in both engagement and delivery.

February: Commence survey rollout

February - March: Due to commence formal workshops with FE and HE in FE staff at Hartbury to inform on KTE landscape and best practice drawing in speakers from HE partners. Actually undertook a mix of formal and informal briefings. Duchy to continue to monitor impact of the specialised training and consultancy on business.

March: Commence engagement of companies into a business network at Hartbury to enable discussion.

April: Launch of business network followed by formal internal briefings.

- Stage Two

April – June: Gather information on business development and early stage performance indicators on: impact of specialized training / consultancy and technical advice on business growth; impact of efficient use of resources or training/technological innovation on the business KPI; cultural changes; ongoing network meetings

June-July: Formal workshops with FE and HE in FE staff involving HE partners

- Stage Three

July: Partnership workshop to explore best practice and outcomes

September: Final workshop involving partners and stakeholders to disseminate findings to inform widely across the range of stakeholders.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

- CHAINS used a multitude of methods with which to transfer knowledge. At the core of each of these is a personal relationship-based approach. The needs and demands of this type of approach impact on the process and systems design of engagement for and delivery of products and services. Through this project knowledge was exchanged in many directions. The project focused at the innovation end rather than the better known skills end of the knowledge transfer spectrum. Transmission included:

Face-to-face in both 1:1 and 1: many, formally and informally. The personal relationship is key to establishing open channels of communication where all parties are clear as to the others' expectations, needs and timescales. Used in all activities.

Contact by phone. A formal structured phone questionnaire with willing participants drawn from the agri-food sector. Sought a mix of quantitative and qualitative data through a majority of closed questions followed up with some feedback and open discussion.

Formal presentation to a group of participants. These were effective when delivered to HBN and to related groups but could not be arranged before this report for the key targets of internal staff.

Informal presentation. As a result of the lack of progress with formal presentations and ad hoc approach was taken when the opportunities presented themselves within other programmed activities to engage managers.

Corridor talks or dissemination by chance meeting. An individual approach effective in culture change by enabling focus on the opportunities for the individual and informal feedback on obstacles faced in process and perception.

Internal and external PR. This in stage one was minimal as it is the products of this stage that provide the case studies. The exception was the promotion of HBN firmly in the KTE context.

### Impact and key lessons learned:

#### • Lessons learned by the partners:

- Semantics and Language. The vocabulary and meaning of KTE is distinct and different from that used within either academia or with employer organisations. This extends on to the language of funders. Despite the efforts of HE and the long running Knowledge Transfer Partnerships, the term knowledge transfer is poorly understood by employers in the agrifood sector.

- This is compounded by the gap between scientific and commercial language. The project has helped to show a gap in the food industry that exists between scientific and business language, and how this can be particularly detrimental to small businesses.

- Small businesses rarely have people employed whose job is to interpret the science behind a product's development and to advise on what the potential manufacturing problems are, or interpret information in a non-scientific way to make it applicable to their product development.

- Time and Timing. This can vary from the extremely quick, e.g. the rate of take of HBN when offered to employers against the timing issues of organising a workshop across all FE departments to inform on KTE.

- For direct project engagement, small businesses are normally limited by time and would benefit from a service that provides a structured project plan from the beginning, which clearly identifies each party's commitments and timescales of completion. This will also assist the college by providing a better and more efficient service, which in turn will allow the service to assist more people.

- Funding is key to take-up by both industry and colleges. The survey demonstrated the need for resources to overcome perceived costs which was confirmed in discussions of HBN over issues such as the enhanced capital allowances of the Budget.

- The culture change discussions gained impetus at middle manager level once the opportunity arose to discuss the SWRDA Expression of Interest opportunity as this enabled staff to visualise potential benefits.

- Planning and execution. Important practical lessons about the delivery of providing business support in an educational setting have been learnt for example, the food areas must be managed in a way that allows for the most effective use of the areas for both business and education purposes.

- College approval to undertake activity needs to be matched with financial budgets. Operational budgets must be established to ensure there is a constant availability of equipment and consumables for businesses. Yet such planning must be executed with flexibility. Where the formal approach to culture change was ineffective; the informal approach was effectively adopted though more time-consuming.

- In the future, based on what we have learnt from this experience, the FIS would develop a more structured approach to the delivery of the service. Through this project the service providers have gained knowledge and confidence in being able to identify problem areas more quickly and be able to focus directly on establishing the problem; ensuring the beneficiary understands the problem, and providing a solution. This confidence will help the team to develop a more efficient and structured service in the future.

- No intrinsic FE/HE preference. The research indicates that a third of agrifood companies would engage on KTE activity and that in so doing they do not have a preference for either HE or FE. FE may see itself as the poor relation to HE given their annual formula HEIF funding but the market is open to FE approaches.

**Case studies:****Spice House:**

Spice House is a start up business who requested support in the commercialisation of a range of 'cook in sauce' type products. The manufacturing unit at the College is likely to be used in the short term to produce.

Spice House really needed assistance in the validation of a suitable, safe manufacturing process and with identifying suitable packaging format and suppliers.

Trials have been arranged where the process has been set up. Spice House has used the food processing facility to prepare the sauces and then they have been packed and processed to ensure that an adequate shelf life can be achieved.

Other support has taken the form of one to one consultation and the participation in a training course to raise the knowledge and awareness of issues being tackled.

Spice House has an ambition to launch a comprehensive range of products with a shelf life that will allow the products to be marketed and sold effectively.

**Boccadon Farm:**

specific areas needed addressing in the business included optimisation of the current range of unripened lactic cheese products; coupled with the upskilling of the current dairy workforce, to provide a better understanding of the processing techniques and how the process impacts the final product.

Also an investigation of the opportunity to develop a blue variety from the existing product range.

Initially training was provided on a one-to-one basis to raise the knowledge base of the employee concerned with the manufacturing of the cheese products. Additional support has been provided to assist in identification of packaging materials and other consumables to ensure that the technical knowledge transfer translates through to the finished products.

The one-to-one session prompted a trial 'make' which produced an enhanced, higher quality product. This has given Boccadon the confidence to develop a blue variety, with the continued assistance of FIS.

Aims include increased product range together with a consistent high quality of product. Boccadon are a small producer who will rely heavily on the provenance of their product. As such it is essential that the quality of the product is at the highest level.

**Review of company interventions:****What worked/what has been easy?:**

- Celi Cummins of the Spice House has been very easy to work with. She has been eager to learn from the experience of the Food Innovation Service Team. To this end the trials that have been organised have proved very useful in clearly demonstrating the need for the products to be processed together with the preparation and processing methodologies.

**What did not work/what has been difficult?:**

- The main difficulty has been in driving the activity forward efficiently. Being very small businesses it has been hard to arrange dates to suit all parties. The processing side of the trials has needed some compromises due to the availability of equipment.

**Lessons learnt/what would be done differently?:**

- Principally the biggest change would be to ensure that the project was scoped out fully from day one. With a small business it has been recognised that activity can be quite fragmented and it will be important in the future to ensure that the correct level of structure and discipline is developed up front.

**What impact did this work have on the business, quantitative and qualitative?:**

- Spice House has developed a range of products suitable for launch and will be marketing the range of sauces in due course.
- Boccadon has produced a high quality product and gained confidence in being able to develop and expand its range of cheeses.
- The biggest impact has been that the Spice House and Boccadon have been able to use the experience of the FIS team to minimise the mistakes that many small businesses make. This is mainly in understanding the actual capital investment required to meet the processing needs.

**What's next?:**

- Spice House will continue to use the food processing facilities as a type of incubator facility until suitable premises have been identified.
- Spice House will also be in a position to take advantage of future assistance that may be available to the business through the relationship that has been built with the FIS. FIS will continue to play a supporting technical role to the business.
- Additional support has been provided to Boccadon to evaluate the second round of development to assess the feasibility of producing a blue variety to extend their product portfolio.
- Both businesses are continuing to work with the college on their product development and have identified further areas that the FIS can assist with. This project in particular has allowed the FIS to focus on assisting small businesses and develop our understanding of KT work in this area.

**Short Survey / Hartpury Business Network Launch:**

- What specific areas need addressing? FE has not been overtly active in KTE, while HE has been engaged in this agenda for some years. There is a need for greater understanding for businesses including:
- Perception. The FE sector is not seen to be an obvious source of innovation solutions where as it may

be seen as a source of functional skills.

- Knowledge. FECs are still seen to be 'young persons' places rather than truly sources of ongoing lifelong learning and current offerings are not understood.
- Funding. Lack of awareness of how to access innovation co-funding.
- Real costs in time and in meeting others' timescales and objectives

#### **What activity has been arranged to address this?**

- A brief phone or face-to-face questionnaire to owners or senior directors of agrifood businesses located in the north of the South West and in the bordering counties of the West Midlands.
- From a total complete sample of 30 businesses, 50% were micros and the remainder employed fewer than 250 staff with a third employing 10-49 staff. Two thirds were in farming, agriculture or horticulture as their prime business.
- Significantly almost a fifth was in more than one element of the agrifood chain as the result of diversification. This is a good reflection of the sizes of businesses in this sector and of the government impetus for diversification.
- Preliminary findings of the research are given below. It is intended that the full details will be published through a peer reviewed journal.

The importance of disseminating activity to employers was recognised at bid stage not least because the organisational, semantic and cultural differences were emerging. For Hartpury this was undertaken through the broadening of the Hartpury Business Network (HBN) with a formal launch on 23 April 2009 (see above).

This followed on from two innovation-related activities undertaken in March and October 2008 for Food & Drink groups. HBN provides a monthly networking opportunity for local and regional businesses to understand more as to:

- how they can interact to provide critical focus for their needs as rural and agrifood organizations.
- what the college can offer through the showcasing of skills projects and initiatives in a non-overtly sales approach.
- ways to develop relationships and trust before a KTE need is identified.
- how to share knowledge through the provision in most months of a speaker-led session addressing issues of the day or tools for effectiveness.

#### **Review of employer knowledge and needs:**

- While it is dangerous to extrapolate too much from a small sample size, it was broadly found that the concept of Knowledge Transfer has had little impact on the agrifood sector particularly in terms of HE/FE engagement in innovation type services.
- If the perceived costs can be overcome than a third

of organisations would consider such engagement. The survey confirmed some of the four thesis with the significant exception that FE might be the source of KTE equal with HE. The research provides initial findings which with a larger sample size would gain quantitative significance.

- For this sector for SMEs, the need is for KTE to be understood regardless of whether that understanding comes from FE or HE and with half already engaged at some level with FE, it would seem to be the prime vehicle if the funding issues can be overcome.

#### **Review of Employer Engagement:**

The levels of interest and participation were surprisingly high for the launch event perhaps reflecting the effectiveness of the college's needs-based approach to employer engagement but more likely the long informal lead time into this launch as the potential for a regular network had been discussed with external stakeholders for almost a year.

Objective feedback from participants collected informally demonstrated that the event was successful in providing a forum in which to discuss the Budget and raise common concerns. (This was referenced the following morning on BBC Radio Gloucestershire).

An intriguing by-product of the launch was the raising of awareness of KTE and the potential role the college could play with other stakeholders. This included engagement of suppliers to the College in HBN who now viewed the college as able to provide services to the company.

This awareness issue was underlined as the Business Development Director was invited to speak at a local NFU meeting on the issue of KTE and the role the College could play.

The review of the effectiveness of HBN can only be measured over time through attendance at the programme which is mapped out up to December 2009 and outcomes that result of companies engaged with it.

#### **Workshops and HE/FE culture changes:**

What specific areas need addressing in the business? Hartpury has a unique position as a hybrid FE and HE institution, where there are no directly funded HE students.

As an FE College with both academic streams, there are significant culture change issues.

#### **For FE, barriers include:**

- Perception. KTE is not seen as a traditional FE area of expertise or if it is then only in the context of a fundable course with traditional start and endpoints.
- Knowledge of a fuller range of KTE processes and approaches.
- Funding. Lack of awareness at institutional and individual levels of how this works.
- QA and how it relates to KTE – the downside of true innovation is failure.



**For HE, barriers include:**

- Research versus process knowledge creation, guides HE intervention as this leads to academic publication.
- Funding. Prevention of perception that FE invading a core area for HE.
- Supervision. Often seen as been in the academic sense of supervising the student to achieve curriculum targets rather than in a project. Best practice on overcoming this is developing.

**Barriers for both include:**

- Sharing and creating best practice using and expanding on the existing developments at the food end of the chain to reflect on the agricultural.

**The solutions include:**

- workshops to develop staff knowledge around KTE and innovation issues and how they can be applied.
- working closely with early adopters to create opportunities to explore best practice and hence case studies for dissemination.
- wider engagement in traditional HE networks and awareness of known tools through invite workshops with HE institutions.

**Review of Workshops:**

While it is known that cultural change requires time, the time required to set up the process should not be underestimated. By the time of this report it was planned to hold at least one workshop for FE staff to enable greater understanding of KTE, but this has proved impossible to organise across the college departments at a convenient time.

While the lead time has hampered the ability to increase the numbers of enthusiastic individuals and their knowledge of KTE practice and opportunities, it has been successful in less formal events and has engaged at senior levels.

Both the HE and FE streams have been engaged at Heads of Department and Subject Leader levels. These commenced at the individual and informal level and have built up to inclusion in appropriate meetings.

For HE, this was a HE Executive meeting which agreed support and the way forward to a formal meeting co-sponsored by the KTE Committee for staff in the summer where the external HE partners would be invited to discuss best practice. Support was also agreed for an awayday with a focus on KTE for a particular department.

For FE, this was a Subject Leaders training day on the Self-Assessment Report where a slot was provided to broaden the learner concept from just the student base to include KTE-related activity with employers and CPD.

**THE FUTURE****Measuring impact; key facts and figures:****For the college, additional income leveraged:**

No additional income was directly leveraged at this time.

Both colleges are involved in submissions to the SWRDA FE KTE tender expression of interest through membership of two bids. The first expands the work of the FE Pathfinder work of Duchy and the South Devon; the second focuses on the opportunities provide by the putative Gloucestershire Incubation Network.

In each case the potential additional income is £750,000. Hartpury is at very early stage discussions (initial meeting being organised) of a possible KTP resulting from the research survey.

The Hartpury Business Network has a nominal membership of £100.00 pa, worth c. £4,000.00 from 40 organisations.

**Impact on STEM learners, the curriculum and progression routes:**

- Given the timeframes and what is being attempted in CHAINS, there is limited impact on STEM learners, STEM teaching and learning or on HE so far in the project, although the relationships and increased understanding of STEM that have resulted from this project have shown that there is potential for work in this area to develop.
- There has been some impact on industry and employers in the agrifood sector at various levels upon which the project will build through the sharing of experiences and monitoring of the progression of those engaged.
- The critical success of this project will be affected over the longer term notwithstanding the short term success stories of case studies and HBN launch.
- The medium term success will be the wider numbers of college staff who have sampled KTE and may understand the range of skills required better and of the individual businesses benefiting from increased knowledge.
- No new STEM learners have been engaged.
- No direct changes in STEM learner progression routes have been identified, but attitudes have begun to be changed on project related activity and on the ways of engaging with KTE.
- This has informed wider college debate and will lead to partial restructures at both colleges. For Duchy, this is in the Agri-food Centre; at Hartpury, it is in wider engagement by mainstream academic departments.

**Estimation of new STEM engaged in Knowledge Transfer:**

- Three

**Estimation of increase in STEM staff awareness of Knowledge Transfer:**

- At Hartbury 7 HE members of staff and 18 FE members.
- At Duchy 4 staff members.

**Estimation of new STEM businesses engaged:**

16 new business in HBN.  
Plus two STEM businesses previously a contact of college, but as suppliers not clients.

**Estimation of existing STEM business engaged in Knowledge Transfer activity:**

- Two Duchy attributable to the project with 40 actively taking KT activity to its widest meaning.

**Estimation of increase in business awareness of Knowledge Transfer:**

- 10 through word of mouth at events held at Duchy College.
- 25 through HBN.
- 30 plus engaged through the survey.
- 10 engaged through NFU briefing
- 75 in total

**The next steps:**

Over the summer the understanding of KTE will continue to be cascaded to all appropriate members of staff through at least one formal session for FE and HE, but as expected the key to enabling change is to continue to work at the individual and informal level.

The value of the workshops was always likely to be higher in Stages Two and Three of CHAINS.

1 While all participants were familiar with the term 'training; 80% did not recognise 'knowledge transfer' or understand its context.

2 A wide range of types of training was undertaken by the respondents' organisations from NVQ levels 1-5 but none of these individually was accessed by more than 17% (Level 2). Virtually all respondents (87%) had accessed short courses of between 1-6 days.

3 A similar wide range of sources used for skills and knowledge provider was shown:

Skill Knowledge Provider - busing using

Local training including Businesslink 70%

FE establishment 50%

Consultants 30%

Continuous professional development 17%

HE establishment 13%

On-line training 10%

Train to Gain 7%

This small sample identifies the as yet limited impact or established relationship between HE and the agrifood

sector which may be significant given that the 2 premier HEIs of the RAC and Harper Adams are co-located to the sample. This was underlined by only 3 respondents being aware of KTPs although one of these was hands-on knowledge.

4 Respondents did not differentiate between using an FE or HE institution for collaborative projects to assist their business with product development, innovation or competitiveness, but only a third would consider doing so. There appears to be no causal connection between the respondent's own attendance and projected use of HE/FE.

5 Perceived barriers defined by businesses included:

Potential perceived KTE barrier - business stating

Cost of knowledge transfer 88%

Existing resources 65%

Academic culture 56%

Geographic location/access 38%

Confidentiality concerns 33%

Lack of trust of outside organisations 28%

Business culture: lack of procedures 28%

Fear of sharing information 17%

The inhibitors can be summarised as cost/resource, perceptions of academic access, confidentiality/trust between and within the organisations.  
All can be overcome.



Leeds City College

## INTRODUCTION TO THE KTEN:

### The College and the Partnership

It should be noted that this report has been produced during the period of activity funded by the project. Many initiatives are in train and are expected to lead to much greater take up in the coming months.

Leeds City College is one of the largest specialist print training organisations in the country. The College offers the following:

Support for over 60 print apprentices each year. Apprenticeships are based all over the country reflecting the national.

Delivery of full time qualifications to over 100 students per year.

The College delivers a range of distance learning technical qualifications with over 100 students per year from all the over the country as well cohorts in Eire and Africa.

Delivery of over 200 short digital media courses each year.

In collaboration with Leeds University's Colour Chemistry department, the College has delivered the part-time, distance learning IMPRESS degree programme since October 2000. The course delivers a breadth of the management and technological skills designed and tailored to fulfil the needs of the rapidly changing high technology printing industry. Graduates are drawn from a broad range of technical backgrounds within the Printing, Packaging and Graphics industries.

During the last year the College has established a network of in-company learning centres with several of the country's leading printing companies. 250 new learners have been enrolled on blended learning programmes and a further 500 enrolments have been targeted over the next two years.

Though a number of specialist print colleges have closed in the last decade, Leeds City College's Print Department has expanded with a range of innovative and specialist provision.

The consultancy covered by the KTEN has targeted:

Development of short course/consultancy, particularly in the area of Colour Management

Staff development for and the introduction of Business Improvement Techniques consultancy

Sign posting to further support, particularly with the Leeds University Centre for Industrial Collaboration

(CIC) for Digital Printing

Who's involved? Who are all the partners? What are their roles? What types of learners were involved ? (16-19,19+, WBL , upskill and reskill)

#### The College is working with:

A range of print media companies from multinational to small & medium enterprises.  
the Leeds University Centre for Industrial Collaboration (CIC) for Digital Printing  
Proskills (the Sector Skills Council for the print industry)  
Manufacturing Skills Alliance (four Sector Skills Councils working to promote Business Improvement Techniques)

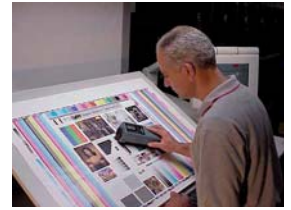
The Colour Management provision has been developed by lecturers Andy Hackett, Chris Stott and Professor Long Lin. Andy studied at Manchester Poly gaining an HND in Printing then went on to complete a Post graduate Diploma in Publishing and is currently Programme Leader in Print and Digital Media with responsibility for delivering courses across the spectrum from apprenticeships to degree level. Chris Stott has over 25 years experience in the sector working in a wide range of printing disciplines and processes with job roles including colour quality control and production management before moving into education and qualifying as a teacher some 6 years ago. Chris was the link between the University and the College at the time of inception of the Colour Master provision in that he was working as a consultant for the University Department of Colour Science and working as a freelance lecturer for Leeds City College. Professor Lin is one of the UK's few "Professors of Print". He is a visiting Professor at the University of the Arts in London and two Chinese universities, specialising in ink pigments and security printing, but with a wealth of practical knowledge thanks to a long relationship with the Fields Packaging Group. West Yorkshire Lifelong Learning Network to develop unitised HE provision to support print media companies

#### Learners Involved

For Business Improvement Techniques, learners are employed 19+ working on the shop floor. The Business Improvement Techniques programme has been identified by the company as most suited to their development.

For Colour Management consultancy, the College is working with company based professionals to augment production techniques

Unitised HE provision is being developed to support practitioners across the Print Media industries.



**What were the critical issues that needed to be addressed?**

Ensure that our Colour Management consultancies were fit for purpose  
Ensure that our relationships with companies and the University were actively managed  
That we developed our ability to deliver Business Improvement Techniques amongst our Print specialist staff.



## THE PLANNING BEHIND THE KTEN

### What was the action plan?

A summary action plan is provided below:

Jan 09	Confirm Offer
Jan 09	Confirm Communications/Marketing strategy
Mar 09	Provide first Colour Management consultancy to ISO auditors
Jun 09	BIT training complete
Jul 09	Build a consultancy infrastructure capable of targeting £30000 funding for the second year.

### What was the catalyst for you all to come together?

The College is keen to maintain its position as the leading print College in the country. Central to this aim is the introduction of innovative courses and more general support for its wide company base. The introduction of a KTEN provided a direction to develop our services. Where possible we wish to provide consultancy ourselves and this has caused the move to develop our Colour Management and Business Improvement Techniques capacity. By developing our close links to Leeds University's Centre for Industrial Collaboration (CIC) for Digital Printing we wanted to provide a one stop shop for any print company.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

It should be noted that this report has been produced during the period of activity funded by the project. Many initiatives are in train and are expected to lead to much greater take up in the coming months.

### Development of short course/consultancy, particularly in the area of Colour Management

The Colour Master provision is a blend of Higher and Further Education. By working in partnership, the University of Leeds Department of Colour Science and Leeds City College have created the premier colour course/consultancy for the printing industry. The provision arose from the genuine desire to help the UK printing industry to become more efficient through a better understanding of the fundamentals of colour and the new science of colour management. The concept was that we would use the knowledge base of the University to present on the Physics of light, the biology of eye, the psychology of colour and utilise the practical facilities of the College and the experience and academic skills of their lecturers to explain how Colour Management issues could be tackled in a production environment.

Our research had shown that there was a desperate need for this training in an industry which had lost 10,000 skilled staff over a five year period and was now very much under threat from global competition. The requirement for this training had become even

more relevant with the launch of a new ISO for the printing industry based wholly around colour control. Controlling colour accurately and consistently has a huge positive effect. It reduces waste in terms of both materials and man hours (up to 70%), reduces press set-up times considerably (up to 50%), creates a measurable standard removing the necessity for the traditional "dark arts" of the printer and creates a better more consistent product. Costs for press time can vary between tens and thousands of pounds an hour depending on the size and the process involved, making it difficult to estimate cost saving for the introduction of colour management. However, it is clear that printers who are not using this technology are quite simply throwing money away.

The overall aim was to create a series of courses based on consultancy interventions. The courses would have cohorts of less than 4 so as to enable customisation of the consultancy to support individual companies.

Our initial problem was that in order to support delivery we required the very latest colour management hardware and software; a considerable investment of over £12,000. This was achieved by utilising the network of contacts that the University. Many of the major suppliers to the print industry have close associations with the University's Department of Colour Science and when the relevant companies were approached they proved to be willing sponsors, seeing the benefit of having their product in front of key decision makers. Investment was still required on the part of the college; the room used for delivery had to be decorated using specific neutral colours, blinds had to be fitted and some software and inks had to be purchased as well as a great deal of preparation time on the part of the lecturers. This preparation time involved a great deal of research and up-skilling on the part of the delivery team, who while very familiar with the theory of colour management and control, found themselves having to take on board a great deal of new technology in order to deliver the practical elements of the course.

Our initial plan had been to run provision at 3 levels - beginner, intermediate and advanced. However, though many potential students saw themselves as advanced it became clear that many of these individuals were in fact at a beginner level. This disparity served to confirm the need for the Colour Master course. We had also intended to run the courses over a three day period. What soon became clear was that the manning levels in the industry were so tight it would be difficult to take key managers away from the business for this length of time. After the initial two courses, a re-write ensued with the course being condensed into two very intensive days.

The course has now run to a diverse range of companies including The Ordnance Survey and Thomas Cook as well as more traditional print companies. The course has now been selected by the company auditing the new printing ISO as their official training course for their auditors. Print and Media certification praised the blend of academic and practical knowledge that the course offered that could only be achieved by the partnership

of HE and FE institutions. The requirements of the ISO auditors were slightly different to the standard course, requiring a further practical element on a printing press - an aspect to the provision that could only be supplied by the College given its state of the art equipment. This high profile connection with the ISO Auditors has led to further interest from print suppliers and we now find ourselves in the fortunate situation where consumables such as ink and paper are now supplied through sponsorship, something which is of benefit to all students coming through the colleges printing department.

#### **Staff development for and the introduction of Business Improvement Techniques consultancy**

The BIT NVQ is being rolled out across the country under the LSC funded Performance and Competitiveness (PAC) Programme run by the Manufacturing Skills Alliance (a consortium of four Sector Skills Councils - Cogent, Improve, Proskills and SEMTA). The College Print Department is participating in the PAC programme and is using it as a vehicle to build a capable and sustainable network of assessors and analysts. Initial training took place in February and more extended, intensive training will occur in week commencing June 29th and week commencing July 13th.

Sign posting to further support, particularly with the Leeds University Centre for Industrial Collaboration (CIC) for Digital Printing

Several initiatives are underway between the College and the CiC. New developments are at an early stage and are commercially sensitive.

#### **Impact and Key Lessons Learned**

Consultancy services are long term relationships. Reporting on some aspects of KTEN activity has been hampered by the need to delay final analyses until concrete changes have been embedded and assessed. For example, Business Improvement Techniques are used to implement changes to company practice that lead to efficiencies and savings. However, in their initial stages, these changes lead to new expense. A full review of savings and efficiencies will be available at the end of the project.

The College tends to work on tight yearly budgets and targets. Some KTEN activities need to be seen as more long term associations. Any of the relationships built up through KTEN activities should be judged over a 3-5 year period.

What impact has this KTT activity had on your College?

#### **On STEM Learners (curriculum enrichment, progression)**

Though not purely down to KTEN activity, the consultancy offer has strengthened our relationship with several key employers and has been part of the development of 5 new in-company learning centres.

These learning centres offer opportunities for learners in the workplace - a particularly important issue for print

workers as there are very few centres for print training across the country.

#### **On STEM teaching and Learning (curriculum development)**

Business Improvement Techniques training supplied by the Manufacturing Skills Alliance has led to direct application of new techniques in the classroom.

#### **On industry and employers**

New provision developed and new customers attracted as described below.

In the last year, the College has set up 5 in company learning centres attracting 250 new learners and a potential 500 more. These centres have been established on back of a developing relationship with industry that in part has arisen from KTEN activity as management leaders attend or become involved in consultancy activities. For example, having completed the Colour Management course himself, Jack Bissett, Technical Director of the Polestar Group stated "everyone in the print industry should take part in this course". This commendation from one of the top industry experts has offered key support to the provision. It has also supplemented a relationship in which we have established 2 permanent learning centres in Polestar factories with another 4 planned.

The final site of Newsprinters to embark on their training programme started on Monday April 6th when Steve Reid, on line Technical Certificate Tutor, Darren Stallan, NVQ Assessor / Co-ordinator and John Procter, Business Manager worked through their induction programme in the new training suite that has been created at Broxbourne.

#### **On HE**

Colour Management skills have been incorporated into the College's print industry Impress BSc.

In collaboration with the West Yorkshire Lifelong Learning Network, unitised provision has been developed in print media. The College now offers a range of courses in digital media products as flexible short credit units from a Foundation Degree.

#### **Case studies from the partners:**

##### **Du Pont (U.K.) Limited**

DuPont operates in 70 countries offering a wide range of innovative products - including colour proofing systems which comprise an imaging unit and the consumables that go with it: ink, paper and software. Focussing on its future performance in this market, the company has formed a strategic alliance with the Digital Print Centre of Industrial Collaboration.

The move has two major roles, the first being to bring Digital Print CIC's expertise to influence future systems. The company hopes to meet and exceed client demands. It expects to increase satisfaction amongst existing customers and increase sales to new ones. The second aim for the strategic alliance is to address

DuPont customers' expectations when using colour proofing equipment. DuPont are working in collaboration with the Digital Print CIC to deliver Europe's first colour management courses for printers, and has donated colour proofing equipment and consumables to use throughout the courses.

Accurate images and consistent colour are prerequisites of proofing and clients are, quite rightly, very demanding when it comes to performance. If things go awry, more often than not, process control is the culprit.

People coming through the Digital Print CIC Colour Masters courses will be trained on DuPont systems, become familiar with their operation, view them as the industry standard and know how to get the best from them – which should, in turn, create demand for the products in the industry.

As the collaboration grows, further projects are anticipated across DuPont's other business groups, including textiles, paints and flexography printing plates, at the CIC and the DuPont R&D Centre in Wilmington, USA.

Benefits of DuPont's collaboration with the Digital Print CIC and Leeds College of Technology:

- Increased satisfaction among existing customers
- Increased sales among new customers
- Improved standards in the print industry
- Establishment of a partnership platform for future projects

### **DS Smith Multigraphics**

(text supplied by the company)

The course opened our eyes to wide range of issues, possibilities and continued learning. A great starting block. Our progress to date:

#### **Digital Department**

Our digital dept is now fully colour managed aiming towards ISO Coated V2. We have a test chart to match which is output periodically or if in any doubt of inconsistencies and have documented the profiling procedures for training purposes and consistencies.

Maintenance and services are actioned periodically.

The West Site (Digital/Studio dept) has a colour management room. Walls painted a neutral grey and D50 lighting in place.

#### **Studio Department**

Our monitors within the Studio are profiled monthly.

Epson 7800 proofer is aimed towards ISO Coated V2.

We have documented the profiling procedures for training purposes and consistencies.

Checks are in place for any noticeable differences between proofs.

Walls painted a neutral grey.

Image Setter/film processor calibrated monthly.

Maintenance and services are actioned periodically.

We no longer have Screen's Trueflow workflow due to

limitations within the software. I am still waiting approval from board level for Esko Odystar which will further help with colour management.

### **Screen Department**

Due to further investment needed to standardise the inconsistent variables we have not moved forward limiting moving forward.

Maintenance and servicing are actioned periodically.

Other than 2 areas setup with D50 lighting we are still waiting for the dedicated colour viewing room to be finished. Plans are in place.

### **Moving forward**

Due to the coarse screen ruling we are led to believe that the software and hardware we have will not create a consistent profile. Further large investments are required to create consistent results in the Screen department.

We have moved forward but still need to understand more and I believe we need to invest, learn more and move forward even quicker than we are currently doing. The Colour Master Course was fundamental in us taking these first steps.

The initial changes that we have implemented has improved our relationship with current and prospective clients due to our ever increasing knowledge. We act and sound more professional, we can work with our trade clients all aiming towards similar standards. We have raised our standards. Productivity has increased through better understanding of colour and achieving the correct result first time. As for profit, this is hard to calculate but the above pro's will have an impact on this.

### **The KTENS experience to date:**

The major difficulty in the KTEN development has been delays introduced by the need to take staff out of curriculum commitments. The need for staff development (in Business Improvement Techniques) or to arrange meetings with companies creates a time pressure on an efficient team that is extensively timetabled. It is hoped the future funds to support KTEN activity will allow the College to free up specialist staff.

## **THE FUTURE**

### **The next steps:**

It has been difficult to assess the future for the KTEN at this stage in the project. Our full launch for the activity occurred on the 30th April.

The Colour Management provision will continue over the next year. ISO 12647 compliance for the consultancy has attracted major interest. The College intends to actively drive the consultancy arm with targets for income.

Business Improvement Techniques are currently being implemented with over 40 learners on programme.

Future plans are for at least another 80 learners in the next six months.

Unitised HE funding has been secured for the next two years which will support 40 places on high level print media provision.

### Measuring impact- Key facts and figures College

**Additional income leveraged £** (this could be RDA funding, consultancy fees etc)

New Engineering Industrial Fellowship Scheme £12,000  
Equipment/Materials Sponsorship £12,000  
Consultancy Fees £6,000  
(estimate £15,00 by August 09).

With a list price of just under £5000, DuPont have donated a Cromalin Largo Colour Proofing System at the college specifically to support Colour Management training.

Estimation of the number of new STEM learners engaged

In the last year, the College has set up 5 in company learning centres attracting 250 new learners and a potential 500 more. As discussed previously, this has been in part because of relationships developed with KTEN activity. In addition there are now 40 new learners on Higher Level unitised provision and 26 learners on Colour Management courses

Any changes in STEM learner progression routes

Development of Higher Education unitised provision to support high level media delivery.

Introduction of Business Improvement Techniques NVQ Level 2 & 3

### Teaching and Learning

Estimation of new STEM staff engaged in Knowledge Transfer

6 staff being being trained in Business Improvement Techniques

2 staff involved in Colour Management consultancy  
2 staff involved in referrals to the Leeds University Centre for Industrial Collaboration (CIC) for Digital Printing

Estimation of increase in STEM staff awareness of Knowledge Transfer (attendance at events)

Impact on the STEM curriculum – STEM curriculum developments and enrichments

Impact on the quality of STEM provision – Lesson observations grades, Peer to Peer reviews, reflection n/a as yet

### Industry/Employers

Estimation of new STEM businesses engaged (please note that these companies have not been formally asked for permission to appear in any wider publication)  
Ordinance Survey

Cosmos  
Multigraphics  
Thomas Cook  
Procon  
Print and Media Certification Ltd  
Magicard

Estimation of existing STEM business engaged in Knowledge Transfer activity

Prinovis  
Polestar  
Dupont

Estimation of increase in business awareness of Knowledge Transfer

It has been difficult to assess the future for the KTEN at this stage in the project. Our full launch for the activity occurred on the 30th April where we 44 print professionals from 21 print related companies attended an awareness raising event. A College and University stand at "Northprint 2009" in mid-April, an exhibition for UK print specialists, attracted considerable interest and company follow up is yet to be assessed.

New jobs created as a result of KTT activity 3 new assessors employed to support new learners. Please note that these are not simply down to KTEN activity. However KTEN activity played a key part in building the relationships that led to the new employees being taken on.



## INTRODUCTION TO THE KTEN: The College and the Partnership

The bid was made by Northampton College on the back of several years of involvement with the New Engineering Foundation through Industrial Fellowships and a successful history in the delivery of the NVQ in Business Improvement Techniques and associated lean and clean manufacturing curriculum.

- The latter catalysed a further arm of proactive development into Low Carbon improvement technologies.

### The project involved:

- Chris Davies, Head of Faculty for Technology and Enterprise, Northampton College
- Austyn Beeching-Smith, Programme Manager Engineering, Northampton College
- Six members of College Engineering staff: Neil Tobin, Phil Arnold, Lee Hopkins, Chris Blakey, Tony Coles, Andy Thirtle.
- SEMTA
- Manufacturing Advisory Service,
- Pro-Enviro Ltd
- East Midlands Development Agency.
- Renewables East
- Kab Seating
- Johnson & Starley
- British Rail
- Nimlock plc

### The critical issues are:

Within the College, the formation of a Business Centre helped to polarise the focus of the home college based curriculum on other forms of employer engagement beyond Train to Gain and Apprenticeships.

Additionally the advent of Diplomas calls for the embedding of industry relevant material as a matter of course.

One very clear and self-funding way of ensuring staff knowledge stays current is to provide forms of consultancy involving both staff and learners. Whilst KTPs and particularly Mini KTPs provide a route for FE colleges to engage they are largely HE focussed and do not address the operational issues that face organisation on a daily basis where staff and learners could assist, e.g. brainstorming with learners for a concept, brand testing, solving a specific engineering problem, producing a prototype part from source diagrams, testing and monitoring items.

The College has had two recent such enquiries, one prompted through the KTEs project to source solutions for Media control in the Trafalgar Square lighting on New Years Eve 2009 (point 3.3.2.8 below). In 2007, Tony Coles, one of the College's NEF Industrial Fellow was able to assist Franklin Silencers in devising welding protocols.

The KTEs project provided seed-corn to fund with purpose, a strategy to engage with employers outside of the normal routes with a view to developing a Knowledge Management Platform with an initial focus on Renewable Energy Technologies.

## THE PLANNING BEHIND THE KTEN

### The summary action plan:

- Jan 09 Appoint project Co-ordinator
- Jan 09 Disseminate project o Engineering staff at Northampton college and University of Northampton
- Jan 09 – Aug 09 Develop a Web Platform with Pro Enviro – to allow exchange between work link mentors
- Jan 09 Networking/Knowledge Transfer Event with KAB seating
- Feb 09 Develop work link mentor scheme
- Mar 09 Networking/Knowledge Transfer Event with Bearwood Eng seating
- Jan 09 Development of learning materials for KT partners
- Apr 09 Renewable conference to promote KT, engage local business, develop work link partnerships
- Feb 09 Introduce KT at Enhanced Engineering Advisory Board
- Feb 09 Networking event with Elba
- Feb 09 Promote KTEs in Business Centre Newsletter
- Mar 09 WTG and Solar Panels Business Seminar
- Mar 09 Joint KTT/KTP Event with University of Northampton

### The catalyst for the partnership:

- Outside of the standard provision, the college has been actively involved in multiple initiatives to provide trained and educated staff/students for employment and progression.

- These have included over five years involvement with the East Midlands New Technology Initiative.
- The College has worked closely with New Engineering Foundation for the last 5 years, during which time it has consistently been striving to meet the needs of learners to ensure that the learning experience is relevant and up-to-date and meets the needs of employers.
- The College has been active participants in the Industrial Fellowship Scheme and spoke at the New Engineering Foundation annual conference and awards ceremony 'Innovisions' in January 2009. One of the employers – Aquafabs - also spoke at a key LSIS national event ' FE Knowledge Transfer and Innovation in Turbulent Times' and spoke at length about the responsiveness of the College to meet his business needs which has led to a positive impact on his business.
- The College has also worked extensively with SEMTA. The regional Manager for the East Midlands, Malcolm Healey, wrote:
  - "A late entrant onto SEMTA's Business Improvement Techniques Capacity Building Project (East Midlands), the college grasped the nettle and, seeing the clear market opportunity for Lean delivery, immersed itself totally in the development of a skilled workforce to deliver training / assessment in Business Improvement Techniques (BIT). Neil Tobin subsequently became one of the first assessors from the programme to successfully complete both the required BIT assessor training and Productivity & Competitiveness Analyst training. In addition, upon completion, the college immediately identified the National Skills Academy - Manufacturing (NSA-M) as both a progression route for continuous professional development of its BIT delivery staff and a mark of quality assurance upon which it could secure new business. To date, the college is one of only a handful of organisations in the region which has met the NSA-M standard and is approved to deliver NSA-M material. "
  - Furthermore, through Chris Davies's foresight, the college is continuing to develop new initiatives to support manufacturers to improve their competitiveness through skills development. Recognising the changing nature of manufacturing, such projects have often been linked into emerging key drivers within the sector, such as new technology and developments within the knowledge economy.
  - Examples include the development of the Lean & Clean foundation degree in conjunction with the University of Northampton. This links Lean / Business Improvement Techniques with the increasingly important environmental agenda and provides a progression route for learners accessing the college's Business Improvement Techniques provision at lower levels.
  - The College has also been heavily engaged in supporting businesses through the New Technology Initiative and has recently been successful in securing funding for a Knowledge and Technology Exchange in Further Education Project (KTENs) and is currently focusing activity on the increasingly important "renewables" agenda.
- Partnership working is a key strength. As well as working closely with the Regional Manufacturing Advisory Service within the BIT Capacity Building Project and its current links with the local university, Northampton College continues to work jointly with SEMTA and the NSA-M in promotion of the key messages and sharing best practice.
- Both organisations were invited to present at a recent successful employer event organised by Austin Beeching-Smith and the college also hosted Semta's most recent East Midlands Training Provider Workshop – an event focused on sharing information and best practice among the region's training provider base and promoting joint-working / collaboration to improve delivery and provision across the region.
- Furthermore, largely through Yvette Witcombe's drive to provide excellent service to employers and her understanding and awareness of SEMTA and the wider issues impacting on manufacturing, there is a steady stream of referrals from the College wherever SEMTA involvement could add value to a company.
- There are limited opportunities for STEM staff to interact with the workplace and derive the skills and examples to bring a classroom to life. This project provided that opportunity.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

- An initial lunchtime meeting was held with Engineering & Technology staff to brief them on the project using an adapted presentation from the KTEN's launch event. Six members of staff signed up to participate.
- The item was placed on the Agenda of the thirteen strong college Senior Management Team and a presentation given explaining the concept. The SMT embraced the opportunity for evolving the embryonic activity associated with development of 'consultancy' work and the opportunities derived from networking.
- A three hour event took part at Kab Seating with presentations explaining the KTEN's concept, the SEMTA compact agreement and the role of the Manufacturing Advisory Service. College staff were then invited to network with employers. Details were collected from participants and pairings made for inclusion on the Knowledge Management Platform. One instance output from this was the request for a quote for a member of staff to assist for two days in Johnson & Starley to conduct a welding test.
- A Renewables Conference was organised at Northampton College using KTENs as the driver and the HOF gave a presentation to make similar pairings, though numbers were low at fifteen, the event was graded as very good or better by all that attended.
- A radio interview was conducted on BBC Radio Northampton, detailing the success in bidding for the KTENs project money and the purposes of the project.

- The Head of Faculty was invited by EMDA and ProEnviro to talk at a Conference in Nottingham on the KTENs project. Over 60 people were present, a talking heads interview was also conducted.

### Impact and Key Lessons Learned:

- Lessons learned by the partners:

The release of teaching staff can only be effected efficiently if the hours remission for activities are built in to the annual expectation at the beginning of the academic year.

Activities started mid-year can only be tacked by managers or part-time hurly staff, which may be adequate but misses the main body of college staff that will adopt Knowledge Transfer.

- Impact of KTT activity on the College:

The Award of the KTEN's funding put the College at the forefront of the regional project to produce through linkage with other regional initiatives a regional Knowledge Management Platform for use at the level of the practitioner.

On STEM Learners ( curriculum enrichment, progression): enrichment activities in Renewables in 6 hour modules were produced for all engineering learners. 120 learners undertook enrichment.

On STEM teaching and Learning ( curriculum development): a KTENs champion will be appointed for the IT curriculum team with a set of KTT related targets. It is considered worthwhile investing in this to promote the objectives of KTT and consequent multiple benefits.

On industry and employers: the feedback from the Energy Connections conference in Nottingham was good 60+ attended and received a 20 minute presentation on KTENs and the plans for the East Midlands.

On HE: networking event is scheduled for early June at Northampton College for and College STEM staff to meet counterparts to increase the flow of ideas and produce parings in a similar fashion to the concept outlined above.

On community engagement: the link with the Business Community has been explored well above. For Adult Learners Week on the basis of the work though KTT and EMDA infill provision onto Renewables tasters are scheduled.

On others: having just gone through Ofsted, the engineering inspector was singularly uninterested in these developments and gave the impression they were an unwelcome diversion. There is even a feeling that participation in this and similar project detrimentally affected the team.

### Case studies from the partners:

#### The Professional Development of Teachers:

- Participant: Neil Tobin, Advanced Mechanical Engineering Lecturer, Faculty of Technology and Enterprise

- Course attended: Two week work placement at Toyota UK

• As a direct result of his work placement Neil has been able to improve and develop his courses, in particular the Business Improvement Techniques (BIT) and Lean Manufacturing programmes.

• With even more enthusiasm and using the valuable skills he gained during the placement, Neil has successfully delivered BIT training at Aquafabs, a small SME company located in Northamptonshire, and lead on new projects such as the Toylander car which was launched at the New Engineering Foundation Awards in early Jan 2009.

• The training he delivers in the workplace has improved efficiency and customer service during a difficult economic climate, and he continually works with employers to develop further training packages.

#### Stage Right:

• As part of the Electrical Lecturing Team within the Faculty of Technology & Enterprise Lecturer Philip Arnold along with his team have been seeking ways to inspire his students to raise their ambitions beyond that of becoming Electricians.

• Through contacts made in his career he acquired amongst other resources an ex-RAF Firestreak Air to Air Missile to bring alive the teaching of Newton's Laws and demonstrate electromagnetism and much more.

• It also led to the Imperial War Museum at Duxford offering work experience to our students allowing them to help refurbish vintage piston and Jet aircraft which in turn could lead to job opportunities and forming further partnerships within the industry.

• When students come face to face with an actual missile, to be able to touch it and see how it works it makes the concepts relevant and demonstrates to them how far their career can progress with determination and continued learning.

• When students come face to face with an actual missile, to be able to touch it and see how it works it makes the concepts relevant and demonstrates to them how far their career can progress with determination and continued learning.

• It helps keep the College in touch with current developments in all areas of electro-technology; and ensures that what is taught is what the students need for the future and enables teachers to answer the questions they bring from their work experience.

• An example is Phil Arnold's Fellowship with Stage Right, a company which provides special effects and audio visual for the entertainment sector.

• After a lecture on inductance and capacitance one of his students who works for them explained a problem the company had encountered with the sound system for the New Year celebrations in Trafalgar Square. After ordering and installing expensive special cable, the system would not work. They had to rapidly rewire the whole site with another type. The company never did

find out why the expensive cable would not work.

- Phil brought in a sample of the cable the following week and immediately identified the problem - it was an inductance and capacitance problem - and exactly how the factors affected it. The example was shared with all my students who now understand and appreciate a concept they might not otherwise have been taught.
- This increases the students interest in the subject and respect for the teacher which reflects in their success.

### The KTENS experience to date:

- One critical success factor has been the 'Three in a row' concept, which is demonstrated well in this project. Between NEF, the HOF and a number of staff next in the line, the synergy was exemplary and provided the support at the strategic, tactical and operational level to ensure success.
- In terms of what would have been done differently, the College would have lobbied for a Micro-KTP and micro fellowships to allow staff to experience single days with their paired colleagues to cement the relationships and kick start a higher volume of information flows.

## THE FUTURE

### The next steps:

(if additional funding were available):

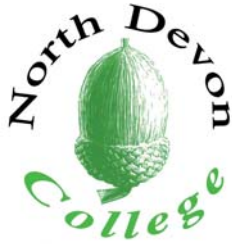
- The Knowledge Management Platform would be extended with SEMTA to extend to the East Midlands Region as a general platform for STEM related issues to be fielded by the relevant local/regional champion.
- Micro industrial fellowships and micro KTPs would be explored.
- The concept of pairings as work-link mentors would be extended via a 'Match.com' to give each level 3 STEM learner an individual contact in industry to access via email.
- An IT KTENS champion will be funded in 2009-10 (see below).

### Measuring impact; key facts and figures:

- For the College, additional income leveraged:
  - £400.00 income from the Renewables conference.
  - £300.00 consultancy work secured.
  - £15,000.00 from EMDA to coordinate and deliver a Regional Foundation Degree in Sustainable Improvement Technologies. The success with KTENS helped secure the role.

- £5000.00 KTENS champion for 2009-10.
- Estimation of the number of new STEM learners engaged:
  - 10 adults in Renewables.
- Changes in STEM learner progression routes:
  - The inclusion of the ABC Level 2 Award in Sustainability and the Renewables Industry targeted at Adults for inclusion 2009-10.
  - Two level four qualifications will be offered as Foundation Degrees in 2010.
  - The activity generated through KTENS projects has catapulted these initiatives into a Regional and National arena.
- Estimation of new STEM staff engaged in Knowledge Transfer:
  - Three new STEM staff.
- Estimation of increase in STEM staff awareness of Knowledge Transfer:
  - 15 STEM staff with knowledge of KT (after the UoN networking event).
  - 13 members of SMT all with direct impact on STEM.
- Impact on the quality of STEM provision:
  - In year internal observations have shown a 5% rise in year to 72% grades 1&2 in Engineering.
- Estimation of new STEM businesses engaged:
  - Three.
- Estimation of existing STEM business engaged in Knowledge Transfer activity:
  - Five.
- Estimation of increase in business awareness of Knowledge Transfer:
  - 150 businesses.
- Plus: radio interview.
- New jobs created as a result of KTT activity:
  - None known.





## INTRODUCTION TO THE KTEN: The College and the Partnership

North Devon College is a highly successful, expanding institution delivering Further and Higher education to a broad geographical community.

On 1 August 2008 North Devon College merged with East Devon College to create a £35 million institution serving nearly 1500 square miles of rural Devon and North East Cornwall.

The College has also received approval to build a £100 million plus new College in an exciting riverside setting in the centre of Barnstaple. This 34,000 square metre building will be the largest ever single development in North Devon and has very high levels of local support. The new building will turn the traditional College inside out showcasing skills and seeking to engage the whole community. Construction is due to start in 2009 with the College opening in September 2011.

North Devon College attracts over 14,000 student enrolments each year with ages ranging from 14 to 80+ years. The College delivers significant provision across all Learning and Skills Council programme areas (except agriculture) in a wide range of academic, vocational, work-based, recreational and Higher Educational (in collaboration with the University of Plymouth) subjects.

In its most recent Ofsted Inspection, the College was described as Outstanding in all areas. The College has Beacon status and holds CoVE status for two vocational areas (Construction Trades and Manufacturing and Engineering Support Services). The College also has the Investors in People standard and is recognised under the Positive about Disabled People scheme. The College was awarded the Customer First kitemark in November 2006 and is currently working towards the Training Quality Standard. The College is also Matrix accredited for IAG.

The plans for the College new build include innovation facilities linked to the College's HE provision, which will be jointly funded by HEFCE and the RDA. This development is evidence of a step change in provision, with a much greater emphasis on business innovation services and entrepreneurship, the teaching of which will be embedded into vocational courses.

The area suffers from low skills and low wages, but a high cost of living, and in order to tackle the problems of low GVA, the College needs to develop itself as an effective link between local business and the higher education research and development community to

ensure the two-way exchange of good practice, knowledge and technology.

### The consultancy covered by the KTEN has targeted:

- As part of the application for funding from HEFCE, the College has made a commitment to build internal capacity for the delivery of Knowledge Transfer Partnerships, as well as undergraduate and graduate placement projects.

The College is committed to building up to delivering up to 5 KTP projects per year from 2013/14 onwards and 50 graduate projects with local small businesses per year, subject to funding stream availability.

The College has a Four Faces strategy, which ensures tailored delivery is developed to meet the identified needs of four distinct groups: young learners, adults, employers and HE. As part of the employer face, the College has well-established Workforce Development Teams within its academic departments, and a central supporting Business Development Administration Team.

Staff in the teams, both academic and support, are dedicated to consulting with local businesses to establish training and development need, and to developing bespoke training and delivery to meet identified needs.

### The College is working with:

Chris Sturley, Technology Subject Forum Chair  
University of Plymouth

Jimmy Jewel, North Devon Manufacturers Association

Robin Jeffery, TDK-Lambda UK

Sue Boyle, J&S Ltd

Wayne Brace, Eaton Aerospace

North Devon College has very strong links with local industry, with staff undertaking placements within industry for professional updating purposes, and its knowledge of the local labour market has influenced the decision to focus on engineering, manufacturing and technology.

The College currently delivers 4 Foundation Degrees in this area (Electronics & Communications; Mechanical Design & Manufacture; Digital Technology (recently approved); and Computing), and University of Plymouth staff support the College to deliver the full BSc (Hons) Degrees in Mechanical Design & Manufacture and Electro-Mechanical Design & Manufacture.

The Foundation and BSc (Hons) Degrees have been developed in close collaboration with local business and

the consultation involved in these developments has revealed a desire within the business community to link in to the research and development undertaken within the University of Plymouth in order to influence areas of research and ensure it meets local need. Businesses want the opportunity to articulate to the University the areas of research they feel would help to develop the engineering and technology industry within North Devon.

The College has strong ties with the North Devon Manufacturers Association (NDMA), which ensure that College provision is tailored to local need. This proposal has been developed as a result of discussions with the NDMA and local businesses such as J&S Marine, Eaton Aerospace and Tyco.

### **The critical issues are:**

Whilst the College does not currently deliver significant levels of Knowledge Transfer activity, it feels developing the capacity and expertise to deliver Knowledge Transfer is vital in order to support the local business community effectively. North Devon is a rurally isolated area in the 2nd most peripheral county in England, with no Higher Education Institutions within easy travelling distance.

NDMA data shows that manufacturing employs 22% of the workforce and generates 26% of the GDP for North Devon, making it a significant local industry. The NDMA recognises the challenges of the remoteness of North Devon and seeks to support local businesses to integrate with the mainstream of British Industry and to compete effectively in a global market. In addition, Advanced Engineering is one of the South West RDA's priority sectors, which recognises the importance of the sector to the local economy.

Distance from HE and a lack of HE qualifications is a major issue for the wider North Devon area, and this proposal is aimed at ensuring HE level skills are accessible to local industry. The nearest universities are Exeter (a 95 minute drive away) and Plymouth (a 2hr drive away).

It is estimated that currently only 16.2% of 18-30 year olds in North Devon hold an HE qualification, and whilst the College is very effective in ensuring progression of its learners from level 3 to 4 and above (55% of level 3 learners progress to level 4 and 70% of A Level learners progress), the majority of those learners currently have to leave North Devon to attend University, and often do not return. As a result, the sub-region has one of the lowest percentages of higher education qualifications within its economically active population in all of England (19.8%).

This means the need for North Devon College to provide an effective link, especially through virtual means, between industry and university staff is of paramount importance.

## **THE PLANNING BEHIND THE KTEN**

### **The summary action plan:**

Web site and materials creation.

Contact and observations at the University.

Industrial and business liaison.

Development innovative teaching and learning materials.

Robert Coombes, Manager for Engineering FdSc Programmes, will drive forward Knowledge Transfer and Exchange activities. Robert has close links with local industry and has recently undertaken a six week placement within industry as part of the Lecturers into Industry programme, and has significant local knowledge and strong links with industry.

He will be supported by a range of academic and support staff from the College's Technology and Computing Department, and the project will be overseen by Brian Moores, Head of Technology and Computing, who is a member of the College's Senior Management Team (SMT) and will ensure SMT commitment and support both during and after the project to ensure the practices developed are maintained and disseminated throughout the College.

North Devon College has strong links with local industry, but links with the research base of the University of Plymouth are lacking. The first stage of the project, therefore, will be to facilitate NDC staff to identify and establish links with relevant University staff and to develop a full knowledge and understanding of the University's research activities at undergraduate, postgraduate and staff levels.

Once established, this information will be regularly updated and maintained. Secondly, the College will hold an industry dissemination event to promote the opportunities available to local businesses though linking with the University. The College has run many successful industry events over recent years such as the 'Fryday' event for local construction industry employers, and the NDMA will assist the College in promoting the event effectively.

University staff will be invited to attend the event in order to give direct information and establish links with local businesses. Following on from the dissemination event, the College will act as a hub for knowledge and expertise exchange between specific local businesses and the University. The flow of knowledge and expertise will be two way to ensure that local businesses are able to influence the research undertaken by the University and provide input in terms of their product design and market demand expertise, as well as being able to benefit from research currently being undertaken.

Through this hub, College staff will also increase their expertise both in terms of professional updating and through active participation in relevant research at the University. This will enable College staff based in North Devon to be in a position to better serve local industry directly. In order to support the Knowledge and

Technology Exchange Node on a long term basis, the College will develop an area of its website dedicated to providing networking and communication opportunities between business and academia.

The area will host discussion forums to promote the exchange of knowledge from the academic base to business, and to ensure the businesses of North Devon are fully engaged in university-led research to ensure it remains relevant and beneficial to local industry. The area will provide a direct link for business to a community of practitioners, with details of specific individuals within both the College and the University, and their areas of expertise in order to encourage local industry to tap into this expertise on a regular basis to promote new developments to meet identified need.

The activity and consultation undertaken will lead to the development of an Action Plan of innovative activities to further strengthen the two-way link between local industry and academia via the College. The plan will also seek to enable the College to develop and adopt innovative teaching and learning methodologies in order to better meet local industry need. In addition, the increased level of consultation with business will enable the College to consider specific non-training services which could be offered to businesses, putting College resources to effective, industry-led use.

## KNOWLEDGE TRANSFER

### The transmission and exchange of knowledge:

The main element of the marketing plan will be the dissemination event. This will be held within the College to facilitate the showcasing of skills and expertise to ensure local employers are able to experience and appreciate the range of services, beyond traditional training courses, available through the College and the University.

The event will involve talks from the NDMA, from College staff and University staff leading research detailing the opportunities available and the methods of accessing these opportunities. A variety of demonstrations and displays will also be on show.

The event is currently scheduled to take place in September 2009 to enable the strong links between the College and the University research base to be established and consultation with the employers directly involved to take place. Prior consultation with a range of employers has also identified June as an appropriate time of year to be able to attend such an event.

A key element of the long term communication plan will be the development of an area on the College website to promote links between industry and academia and to encourage communication and sharing of ideas and expertise for the benefit of the local economy.

After the main activity of the project, in order to maintain strong communication, a quarterly e-newsletter will be established, which will contain details of current research and will showcase local business developments

and success stories. The College has a very effective Customer Relationship Management (CRM) system, which currently contains the details of over 5,000 local businesses, which the College has assisted. This database is constantly expanding and will be used as a tool for identifying and communicating with businesses across the Engineering, Manufacturing and Technology sector.

The system identifies a Key Account Holder for each business within the College to ensure clear and effective communication and rapid response to enquiries. Observing project work at post graduate level it is often difficult to see a direct application but understanding either the scientific method, the analytical or statistical reasoning.

During the observation making the link can lead to a learning discontinuity, not quite an Eureka moment, but a learning experience where a number of ideas seem to make sense when put in that context.

During visits to The University of Plymouth meetings with staff and post graduate students have provided valuable insights into the work being carried out at the current time. It is hoped that the work of the KTEN may influence future work at this level which could impact on North Devon businesses.

A PhD student visited at The University of Plymouth was studying sustainable reinforcement materials for composite developing a better understanding of the materials properties and characteristics both by experimental and statistical analysis. At the end of his studies he will have sufficiently large sample and be able to produce reliable data about the material for new designs using sustainable reinforcement substitutes for composite materials.

These materials are biodegradable easily grown and may even use of by-products from farming activities or processes. This may impact on a number of current applications where replacing either glass fibre or even carbon fibre where appropriate and sustainable.

BSc(Hon) in Electro-Mechanical Engineering, Stage Three, as a group project, looked at applications of the College's Mitsubishi robot for which they wrote student briefs including a new set of operating instructions for a number of activities demonstrating a range of functions the robot can carry out.

The members of the group project came from diverse backgrounds: Matthew Chinn of Lambda UK a leading electronics power supply manufacturer, Michael Williams of Unilever – Best Foods manufacturing and Karl Morrison Maintenance Manager at North Devon Health Trust.

### Impact and Key Lessons Learned

(see also the case study, point 3.3 below):

#### Lessons learned by the partners:

- **Aspire Engineering:** an event which was supported by Sue Boyle and a team of her technical staff from J&S LTD, manufacturers of sonar associated equipment, who are developing new product lines both in marine and electronics areas.

Staff of Babcock Marine (Appledore Shipbuilders) who recently became a separate division of Babcock and are partners in the building of the latest Aircraft carrier. "Babcock Marine's future aircraft carrier project team is a member of the UK's Aircraft Carrier Alliance.

It has responsibility for delivering a significant element of the Royal Navy's two new 65,000 tonne aircraft carriers, a task that requires strongly developed partnering skills and considerable engineering innovation". The Royal Marines also demonstrated their new kit and ran a presentation.

- Technology Innovation Day: brought together business and college staff. A few staff were already familiar with some of the technology being presented whereas others had their eyes opened. Staff were then asking for the technologies to be shared across into their own areas of the College. The impact of the event and follow up training is being developed this term and will be handled by the CPD and HR.

- Further planned activities include:

Industry Day 12th June - Industry Open Day

Industry Open Day 2009 to see Loosemoore's Eco House and find out about environmental technologies and the code for sustainable homes.

#### Impact of KTT activity on the College:

- On STEM learners:

A student project will result in better understanding of faults occurring in production equipment by simplifying operator feedback to an on-line automatic data gathering information system which will allow operators to add comments through a menu system on an interactive HMI (Human Machine Interface). It is anticipated that the analysis of the information will allow the prediction of the likely hood of, or possible conditions which would lead to a break down, well in advance, so that action can be taken, and down time can be reduced.

Matthew Titmus, currently a student of the FdSc in Electronics & communications, is working closely with a PLC & instrumentation engineer Steve Mogford of Norbord Ltd, to implement the equipment.

Robert Coombes is confident that this project will be complete success. Matt said "we want to reduce down time, which can have a big impact on production with this information hopefully we'll be able to do that".

- On STEM teaching and learning:

Teaching of Engineering Materials are building a case study based round the way local companies select and process a range of materials for manufacture for use in aerospace, electronics and marine applications.

Development of case studies is now underway for implantation in the new academic year on Electronic Systems and Communications Engineering subjects.

A member of the engineering team, Rod Lamdin, has gained funding from the Colleges innovation fund, which has bought a powerful computer and specialist software that can record video and computer media at the same

time, and using post processing create presentations, recorded lectures and training clips. This will also be valuable as materials for the KTEN activities could be disseminated in this form. The results of this activity will certainly impact on the curriculum.

- On Higher Education:

Robert Coombes is due to give a presentation of KTEN so far at the Annual Technology Subject Forum at the University of Plymouth. 20th May 2009.

#### Case studies from the partners:

##### The industry link with Norbord Ltd

(see also point 4.1.2 below):

Matthew Titmus, a charge hand at Norbord (South Molton) Ltd (manufacturers of particle board and laminates for various applications) is also a student on the FdSc in Electronics and Communications at North Devon College.

##### Also involved were:

- Robert Coombes - North Devon KTEN academic mentor.
- Steve Mogford - PLC & Instrumentation Engineer

##### The critical issues were:

- When implementing production equipments down time can be costly, so for maintenance team records of operating conditions are invaluable, especially any changes which lead to break down or adjustments which keep production flowing.
- This project involves developing a system to automatically gather information relating to key operating conditions, attributes and variables, from production equipment and presenting this information for analysis.
- Following appropriate analysis, the production engineer would be able identify possible triggers and prevent down time. Data collecting Programmable Logic Controllers PLC's and Human-Machine Interface HMI are connected via the factory internet and the data is presented in the form of a spreadsheet.

##### The action plan:

- Construct a web site to allow access and transfer knowledge as community of practice.
- Investigate the subject skills sets and research currently being carried out by The University of Plymouth and HE that could have an impact on the North Devon engineering and manufacturing economy.

Liaise with North Devon Engineering and Manufacturers in the development of KTEN activities.

##### The catalyst for the partnership:

- Matthew Titmus identified an opportunity to improve the reliability of production equipment using the skills developed at work and his academic studies at North Devon College.



**The transmission and exchange of knowledge:**

- Skills developed by Matthew Titmus during his studies on the FdSc in Electronics & Communications including Software Engineering, Organisational Behaviour and Communications Engineering modules gave Matthew the outline of the skills required to manage this type of project.

Matthew recognised the skills sets required to be able to implement the complete the project. His assessments of the tasks lead him to work with Steve Mogford of Norbord (South Molton) Ltd to ensure that both the hardware and software would work together.

Robert Coombes worked with Matthew as a mentor, providing academic guidance in relation to the project.

**Lessons learned by the partners:**

- The company is awaiting the implantation of the hardware but on paper this is projected to benefit the company.
- The increased experience gained by Matthew Titmus doing this project has been very worthwhile not only has he learnt but applied the technical skills and also benefited from working in team.

**Impact of KTT activity on the College:**

- On STEM Learners: project work produced by Matthew Titmus will support him in going forward to stage 3 of a BSc(Hon) in this area and provide a benchmark for other FdSc project students.

This will have a direct impact on resultant case study and assignment materials used within the curriculum.

- On STEM teaching and learning: Matthew Titmus will shortly be submitting his project report which will illustrate the initial findings, but also show management skills in the approach to the project. The project will be an ideal resource for a number of case studies / assignments in A Level / National (level 3) and Foundation Degree modules in engineering and manufacturing subject areas.

The College will have staff with insight into solving real industrial problems that can be relayed to students with College as current experience.

- On industry and employer: the outcomes of the project will inform the management of production on this equipment, if as expected an increased productivity can be achieved with the parameters measured and the analysis can predict short comings of the equipment, within a reasonable cost. This approach could be extended to other equipments within the factory.

The result of working in various projects / areas but specifically with the production equipment monitoring will result in material benefit for the company and should have a direct impact on the Company's bottom line.

An increased awareness of production engineering, which could lead to proactive maintenance keeping the production equipment going before breakdown occurs.

- On HE: case study and assignment materials produced by College staff will be used by HE students on related modules within the FdSc programmes.

The University BSc(Hon) in Electro-Mechanical Engineering, group project based on the College's robot, have developed materials which are now ready to be used be incorporated into the curriculum

**The KTENS experience to date:**

- From the College's curriculum point of view, management of time and release of staff from curriculum timetables is an issue, in project planning, selecting and getting the right people at the right place at the right time is essential for any project to be assured of being delivered on time, but balancing the demand of staff time for both curriculum and projects has been quite difficult and has caused delays to occur.
- For these projects to be completed within the short time slot access to either College teaching staff or work based assessors with the appropriate skills sets, should be identified and released at the appropriate times.

**THE FUTURE****The next steps:**

Further planned activities include:

Industry Day 12th June - Industry Open Day

Industry Open Day 2009 to see Loosemoore's Eco House and find out about environmental technologies and the code for sustainable homes.

As part of the Pathfinder scheme in association with Cornwall college and South Devon College, staff are preparing to undertake GAME (Growth Audit Model Evaluation) Training before approaching businesses in the area.

Further dissemination event now planned for September 2009 when more details about the KTEN will be evaluated and further extension activities will be discussed.

**For the Norbord case study:**

- On installation of the hardware and software, follow up meetings to discuss the analysis and evaluation of the system to identify what the true benefits of implementation are.
- Awareness of what the University has to offer North Devon from Technology perspective is still developing, so more needs to be done in terms of visiting and observing key research sections of the University and this is to be extended to other HE institutions.
- To further extend the projects that could be supported by knowledge transfer, events will be held to disseminate knowledge from various sources. This will happen in two phases with informal meetings during June and July and an extended meeting in September

### Measuring impact; key facts and figures:

- For the College, additional income leveraged:

Business innovation project: £135,000.00  
(as part of Cornwall and South Devon Colleges, which will cover Devon and Cornwall.)

Staff will be looking to carryout Industry Fellowship Scheme using the KTEN as a spring board to further links with industry and HE institutions

- Estimation of the number of new STEM learners engaged:

No measurable increase as a result of KTEN, but case study materials will be available and form part of the curriculum in the new academic year.

- Estimation of new STEM staff engaged in Knowledge Transfer:

Four.

- Estimation of increase in STEM staff awareness of Knowledge Transfer engaged:

300 by end of June 2009.

- Impact on the quality of STEM provision:

Peer observation has given other members of the teaching team some insight into the advantages of the use case studies. This has inspired teaching staff to develop new case study materials for implantation in the new academic year.

- Estimation of new STEM businesses engaged in Knowledge Transfer activity:

None identified.

- Estimation of existing STEM business engaged in Knowledge Transfer activity:

Four.

- Estimation of increase in business awareness of Knowledge Transfer:

The majority of the KTEN has been based around college staff becoming familiar with the research work at the university. With the developments so far with KTEN and Business innovation project it is expected that this will now start to grow very rapidly

- New jobs created as a result of KTT activity:

None at present, but we anticipate one KTP to be in place some time early in the new academic year.

## CONCLUSION

The KTENs have strengthened the FE sector's ability to innovate, respond and meet business needs in engineering, applied science, and technology. They have also improved the bi-directional flow of information and dissemination externally to employers and business partners, as well as informing and growing FE college staff's capability and capacity in knowledge and technology transfer/exchange. Ultimately, establishing a KTEN enables a college to develop and promote innovation, within a dedicated college business plan.

Over the coming months, NEF will be exploiting the gains made through the KTENs by reviewing the ability of colleges to horizon scan for opportunities, publishing proposals to reform the FE planning and funding cycle, and supporting knowledge transfer opportunities for senior college management through our I2E scheme.

For more information, please visit our website [www.neweng.org.uk](http://www.neweng.org.uk), follow us on Twitter <http://twitter.com/NewEng> and join us on Facebook <http://tr.im/NEFonFB>.

Or contact me at the details below.

We look forward to working with you.

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