

FURTHER EDUCATION COLLEGES
AND INNOVATION

ELAINE BAXTER



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DISCLAIMER

The views and opinions expressed in this report are those of the author and do not necessarily state or reflect those of the Gatsby Charitable Foundation.

EXECUTIVE SUMMARY

This qualitative study of a selection of Further Education (FE) colleges in England looked at the impact of innovation on colleges and their partner employers and businesses. Whilst all colleges we spoke to have a focus on innovation in curriculum and pedagogy, many colleges also engaged with innovation on a deeper level, working closely with businesses to deliver improved end results.

We did not put a strict definition on 'innovation' for our participants. Instead college leaders themselves defined what innovation means in their institutions. The research revealed that whilst innovation takes place in both colleges and businesses, it is at the interface of this college-business interaction that the value is driven for both sides.

Activities coordinated by colleges which are of benefit to businesses and which in parallel grow a culture of innovation at the college, can be grouped into innovation themes. Themes such as physical hubs, sharing of capital, hands-on experience, data exchange, applied research, and network facilitation are key examples; these are outlined in detail in this report. A series of case studies illustrates these activities and themes.

Today, innovation in colleges is often seen in terms of the curriculum and pedagogy. Working with businesses to develop curricula helps drive new levels of innovation, and this virtuous cycle evolves over time, with the culture of innovation growing in the college in parallel to driving innovation in businesses. It is therefore possible for all organisations involved to play a pivotal part in furthering innovation, and as a result, positively impact the economy. More intentional focus on business outcomes and measuring these would positively impact both the bottom line for businesses and the culture of innovation in colleges.

Because funding to colleges primarily supports innovation in curriculum, the colleges place their priorities there. For colleges to put an even greater emphasis on the impact of innovation on businesses, it needs to be considered as a measurable target for the college. To make a significant, noticeable difference to the economy, groups of colleges will need to work together collectively to drive innovation in businesses. This is where the influence of policy and dedicated funding towards innovation at the interface of FE colleges and businesses could make a meaningful impact.

INTRODUCTION

It is important to note that this report is not an in-depth academic study. Rather it focuses on qualitative research that was conducted to understand how FE colleges can positively impact innovation in businesses. The research was carried out with leaders (mostly CEOs and/or Principals /Vice-Principals) from eighteen FE colleges in England, in the form of interviews and focus groups to discuss their views on innovation. During these sessions a series of case studies were collected which illustrate the positive impact these colleges already have on innovation in businesses and employer partners.

Colleges were initially chosen from those already involved in Institutes of Technology (IoTs) and, in a second phase of research, colleges not yet associated with an IoT took part. The colleges who responded to our request for information naturally self-select as those interested in, or already engaged in, innovation and who have a focus in this area. Therefore, the examples shared here can be thought of as coming from innovation enthusiasts within the FE sector in England. Conversely, there is a group of colleges with whom we have not spoken. This may be because they were not asked to take part in this research, or they did not respond to the request because they do not have a specific focus on innovation. For these colleges who have not yet embarked on their own innovation journey, this report may be a useful starting-point to learn from other institutions.

The author is an experienced scientist and researcher who has worked extensively at the interface of industry, academia and training. This study intentionally did not focus on innovation in curriculum, as previous studies have provided a rich vein of data to support the hypothesis that this is where colleges place most of their innovation efforts. Instead focus was placed on understanding how a college's approach to innovation translates into impacting innovation in businesses and employer partners.

The evidence gathered shows that the colleges which took part in this research are already driving innovation in a variety of ways, and as a result are having a positive impact on local, national and international businesses and organisations.

SECTION I INNOVATION

I.1 INTRODUCTION TO INNOVATION

Given the author's background, this report is written from the perspective of an industry practitioner with experience of driving technologies through the innovation funnel, from the kernel of a concept to fully-developed propositions in the market. The focus was not placed on specific types of innovation, neither was there a rigid definition of innovation placed in front of study participants. Instead an attempt was made to understand what each participant college meant by innovation, and what this looks like in practice in their institutions.

There were a variety of definitions of innovation presented by the participants of this study. A recurring theme of 'development of new products and services' was seen, as well as 'something that makes a difference'. Past research for the Gatsby Foundation has defined innovation as involving 'both the invention of completely new ideas and also the use of existing ideas by organisations which have not hitherto employed them. Innovation is the means by which new knowledge is applied to economic processes in order to increase productivity and add value to economic activity. As such, it is the engine of long-term economic growth and development, and the major source of productivity and rising living standards.'¹

I.2 THE INNOVATION SYSTEMS APPROACH

The innovation systems approach (IS) is a dominant approach in academic literature on the study of innovation and its influence on policy. According to the IS approach, innovation involves the generation and widespread diffusion of knowledge about new products and methods of production. This is said to occur via a complex, non-linear process involving interactions between firms and other organisations (universities, banks, government etc.) It follows that the performance of an economy in respect of innovation depends upon the rules governing those interactions.²

From past experience, the author agrees that innovation, rather than being linear (including a direct translation of scientific research into products and services), is a fuzzy, non-linear process with a series of feedback loops, and is an iterative and interactive experience. The Human-Centred Design (also known as design thinking) approach to innovation requires that the end user (customer, consumer, client) of the proposition is involved in the design process from an early stage, in order to create the most valuable outcome for the business and the most useful outcome for the end user.

¹ Paul Lewis, 'Technicians and Innovation: A literature review' <https://www.gatsby.org.uk/uploads/education/technicians-and-innovation.pdf>

² Paul Lewis, 'The innovation systems approach: an Austrian and Ostromian perspective' <https://link.springer.com/article/10.1007/s11138-020-00507-8>

SECTION 2 INNOVATION IN BUSINESSES, COLLEGES AND BETWEEN THE TWO

2.1 INNOVATION IN BUSINESSES

Innovation in business has been defined in many different ways, and is modelled extensively in the literature. Different types and stages of innovation are known to exist.

Incremental innovation can be thought of as small changes to current products and services, keeping them up to date and in line with customer expectations. Incremental innovation is unlikely to involve new development or a significant amount of research to keep the proposition up to date e.g. line extensions or refreshed packaging for existing products and brands.

Disruptive innovation can be considered to make a noticeable change or impact to a proposition, possibly the development and utilisation of a new technology e.g. new Apple or Android devices with improved technical functionality compared with previous models.

Transformational innovation occurs when a new market or category is created which addresses an unmet customer need or creates a new 'unknown need' e.g. many of the most recent technology platforms for consumer services such as Uber, Airbnb, Hello Fresh and Zoom.

Doblin's 'Ten Types' of innovation is one regularly-cited model, which encompasses innovation in configuration (profit model, network, structure, process), offering (product performance, product system) and experience (service, channel, brand, customer engagement). This model is relevant for many product and service innovations and is a useful tool for businesses that need a framework to help create a strategic approach to innovation.³

Innovation in business can be supported both by internal research and development and also by collaboration with others outside the organisation e.g. start-ups, universities, colleges. This is known as 'open innovation'. The open innovation model is well-understood and has been utilised by many of the world's biggest companies. The consumer goods giant Procter & Gamble has a target of 50% of its innovation coming from open innovation (i.e. external) sources.⁴ There are advantages and disadvantages to both approaches, and it is common to find that many businesses engage in a mixture of the two ways of working.

For many businesses, innovation is at the heart of everything they do. The outcomes are often focused on new products, services, processes or propositions. Ultimately, it needs to result in driving profit and an impact on the top and bottom lines.

³ <https://doblin.com/ten-types>

⁴ <https://hbr.org/2006/03/connect-and-develop-inside-procter-gambles-new-model-for-innovation>

2.2 INNOVATION IN COLLEGES

When leaders were asked about innovation in the college, most answers were linked to innovation in curriculum. This included new qualifications, new training courses and the provision of the most up to date facilities e.g. labs, workshops, machinery etc. These responses were expected given the role of an FE college is primarily as a place of learning and training to produce a highly-skilled workforce. Many of the college leaders interviewed also spend significant energy in ensuring that their approaches in other aspects of the college (from staff training and motivation, business models and reward / recognition) are innovative.

For some colleges, innovation is already part of the scaffolding that makes the institution what it is. For others, who do not use the word innovation widely in their college vernacular, it is happening anyway whether intentionally supported or not.

Innovation culture in most organisations grows in two ways – from the top down and bottom up. For top-down innovation culture, senior leaders publicly endorse positive behaviours that result in new innovation. They write strategies that call out the importance of innovation in their organisations and place a special focus on specific results or milestones they want staff to achieve. In parallel, they reward those who engage in this way and deliver results for the organisation.

For innovation culture to build from the bottom up, the organisation needs to have individuals who like to experiment, do things differently, work in a new way. Many of these 'early adopters', engage with new approaches and technologies earlier than others and are often the first to try things out. Most organisations have people like this; however not all organisations are set up to foster them. Critical to their success is having the right cultural set-up within the organisation which allows them to thrive and grow as innovators.

For a successful culture of innovation to grow, an organisation needs to have both top-down and bottom-up approaches. To start, this may simply be having a leader who accepts and supports those staff who want to engage and try things differently, and staff who are willing to take risks in their approaches. This is explored further in section 3.

It is difficult and perhaps ill-advised to define a precise role for colleges in innovation. This research has found that there are many ways in which colleges can make a significant impact on innovation, working with business partners. Section 2.3 showcases the range of activities on which colleges can focus which can help to drive innovation for their network of employer partners.

2.3 INTRODUCTION TO INNOVATION AT THE INTERFACE OF COLLEGES AND BUSINESSES

At the interface of colleges and businesses, we found more interesting and impactful examples of innovation. It is these interactions which have the potential to drive improved business results over the long term. In parallel, these behaviours and relationships can positively begin to change the culture of the college over time. Colleges engaging in these ways create positive experiences for their business partners, resulting in strong business outcomes. As college staff engage in these activities, doing so becomes ‘the norm’. This paves the way to a growing culture of innovation in the college community. This organic growth of mindset, behaviours and outcomes is further discussed in section 3.

The activities that colleges engage in to help business partners to be more innovative can be grouped into ‘themes’. Themes which have been identified in this study are described here in more detail and case studies are shared where possible with a non-exhaustive list of innovation themes and associated activities outlined in table 1. The themes identified in this study are consistent with those found in a recent AOC (Association of Colleges) survey which was carried out to understand more about the role that innovation plays within FE colleges’ strategic planning and employer and local engagement.⁵

Innovation theme	Associated activities
Physical Hub	Incubators
	Accelerators
	Enterprise Zones
	Business park activities
	Innovation Zones
	Provision of meeting spaces
	Provision of facilities for use by SMEs
	Commercialisation of new inventions
Free / Shared capital access	Loan of equipment from business to college
	Donation of equipment from business to college
	Loan of equipment from college to business
	Demonstrations of equipment by colleges to businesses
	Access to commercial software
	Try before you buy
Hands-on experience	Work-based student projects
	Work placements
	Secondment to industry
	Secondment to college
	Social action contributions / experience
	Apprenticeships
	Dual professionalism

⁵ <https://www.aoc.co.uk/news/colleges-best-placed-lead-business-and-skills-innovation-revolution>

Data and knowledge sharing	Data sharing
	Technology demonstrations
	Open Innovation programmes / challenges
	Public lectures
	Dedicated account managers for information gathering and sharing
	Provision of meeting spaces
Applied research and consulting	Research and associated publication and conferences
	Reverse mentoring
	Consulting / Expertise sharing
Network facilitation via events	Public lectures and talks
	Coffee mornings
	Show and tell
	Dragon's den
	Competitions
	Open days

Table I. Innovation themes and associated activities.

2.4 INNOVATION THEME CASE STUDIES

THEME I PHYSICAL HUB

Some of the colleges we interviewed are co-located with other businesses / enterprise or incubation centres. These might be referred to as 'incubators', 'accelerators', 'enterprise zones', 'business parks', 'innovation zones' and so on. This co-location of colleges with other businesses (in particular SMEs) creates a unique opportunity for those organisations to cross-fertilise each other with new ideas, new ways of thinking and working. Sharing of resources on these sites can lead to economy of scale and the network (both physically and digitally) can drive innovation to new levels.

Case Study I Myerscough College Rural Business Centre⁶

Myerscough College houses the Rural Business Centre (RBC) which was originally founded with the help of development funds as a result of the foot and mouth crisis. The building was designed to provide incubator and start-up support to small rural-focussed businesses, and continues to support them to this day.

The RBC provides low-cost office rent and space for businesses to develop. It also allows access to other support networks through a range of business networking. Current examples of tenants include:

- Levity Crop Science – an award winning Agri-tech start-up developing stimulants and growth accelerators for the food industry.
- Landmark Environmental – work with a range of industries to help them reduce carbon footprint and environmental impact, with a focus on water usage.
- Chocolate Madagascar – an award-winning chocolate producer and importer working with farmers and communities in Madagascar to ensure that fair prices are paid for raw materials.

⁶ <https://www.uclan.ac.uk/schools/myerscough/index.php>

Case Study 2 Fareham College – Centre of Excellence in Manufacturing and Advanced Skills Training⁷

CEMAST, Fareham College's Centre of Excellence in Manufacturing and Advanced Skills Training, is a state-of-the-art training facility for a range of engineering disciplines including aeronautical, marine, manufacturing, electronics and motorsport. The centre has long-standing and valued relationships with many regional employers including BAE, Airbus, South Western Railway and Hamble Aerostructures Ltd (formerly GE Aviation). These companies use the centre for training their current and future workforce and also help co-design the curricula and advise on the development of the centre's resources.

The centre is located on the Solent Enterprise Zone and, as a result, benefits from relationships with the wide range of employers working from the two rapidly-expanding business parks operating there. This Local Enterprise Partnership (LEP)-sponsored Enterprise Zone is situated adjacent to Solent Airport, which allows the college to bring education and training to life. For example, students in motorsport have been able to use the airfield for testing the college's 750 formula race car and testing the Green Power Challenge car, a STEM project which involves the design, build and test of an electric vehicle. Aeronautical Engineering students are able to complement their theory with access to aeronautical and aviation companies working on a live airfield.

One of the greatest benefits to CEMAST is its co-location with Fareham Innovation Centre, part of Oxford Innovation. The Innovation Centre provides workspace and business support for growing companies in the marine, aerospace and engineering sectors. Owned by Fareham Borough Council, the centre aims to create and support new jobs in these sectors. With both the Innovation Centre and CEMAST sharing a common purpose of supporting regional employment growth and skills development in engineering sectors, they complement each other well. Students from CEMAST are able to work at companies operating from the Innovation Centre as apprentices or in industry placements, or simply to visit and see the projects being worked on and the technologies used at the Innovation Centre. Companies at the Innovation Centre have provided project briefs for students who complete these as part of their higher technical qualifications. Companies are able to visit CEMAST to offer industry talks or expert presentations on relevant topics. Companies using the Innovation Centre are able to access the equipment at CEMAST to support their own projects. For example companies often access the 3D printing equipment at CEMAST to support their prototyping work.

THEME 2 ACCESS TO FREE / SHARED CAPITAL EQUIPMENT

For a select group of colleges, sharing of and access to specialist equipment is a major driver of innovation, both for them and their employer partners. Capital expenditure of this type can be difficult to negotiate, and having access to new equipment without the associated spend can be transformational for colleges or SMEs.

Colleges obtain equipment in a number of ways. In some cases, equipment is given to them by business partners as an in-kind contribution. Others invest in the equipment in order to train their learners on the most up-to-date technologies possible before sharing this with employers in the workplace. This state-of-the-art

⁷ <https://www.fareham.ac.uk/cemast/>

technology sharing drives mutual benefit, as businesses hire better-trained workers and colleges continue to push the boundaries of developing skills and improved ways of working in new areas.

Case Study 3 Dudley College – Building Information Modelling⁸

In support of advanced manufacturing, Dudley College is keen to purchase innovative equipment that will help employers to produce components more efficiently. Over the past few years, it has invested in 3D printers and lasercutters to facilitate some of its business partners' needs.

From a digital perspective Dudley College has also bought into new cross-cutting technologies. The early investment two years ago in Building Information Modelling (BIM) software and Virtual Reality / Augmented Reality technology has reaped positive results. A niche but 'in-demand' software, BIM is used in the construction industry. Data imputed into 3D software allows end users to virtually walk through buildings before they are even built. This has resulted in significant cost savings and increased efficiency in the resulting buildings.

Staff at Dudley College are recruited directly from industry to support this technology, in parallel to recruiting fresh apprentices from all over the country. These apprentices are going into the workplace, partly competent after 12 weeks of training on this industry-leading tool.

Case Study 4 Myerscough College equipment sharing⁹

As a college, Myerscough has extensive links and engagement with in excess of 1000 employers across the country. The nature of their specialist delivery means they expose employers to the managers of the future, whilst in parallel understanding the importance of allowing learners to have experience with the latest innovation in products. Some recent examples of this include:

Stihl: The college has a range of test and prototype equipment from Stihl which allows learners and apprentices to be up-to-date in terms of industry standards. In parallel, Stihl also use the college to deliver training to their dealership networks and staff.

Brandon Hire Station: The college has had a variety of equipment loaned and also donated so that learners can work on the latest technology for the construction plant industry. They have also been able to purchase end-of-life equipment which is suitable for training engineers.

Kubota: Through the development of a planned bespoke apprenticeship programme, Kubota have donated an array of training and test equipment so that apprentices and learners are exposed to the latest technology. This was an in-kind donation with Kubota receiving special rates for booking the college site for use in training their dealer network.

⁸ <https://www.dudleycol.ac.uk>

⁹ <https://www.myerscough.ac.uk>

THEME 3 HANDS-ON EXPERIENCE

Practical, hands-on experience has always been the unique selling point of FE colleges. Employers work with colleges in order to train and recruit learners with foundational basic skills. Such employers engage with colleges (as opposed to universities and other HE providers) to bring people with hands-on skills and work-based technical competencies to fill skills gaps in their organisations which recruiting from universities does not succeed in doing. In parallel, staff with industry experience can help businesses to develop and can drive innovation using individual or group student research projects at the colleges. Activities in this theme include work-based student projects, work placements and secondments both to industry and to colleges.

Case Study 5 Exeter College working with the Met Office¹⁰

Our research revealed a best-in-class working relationship between Exeter College and their partners at the Met Office. Exeter were quick to point out that having connections at every level from the CEO down is critical to the functionality of the relationship. This contact at every level is what drives the agility of their relationship and has facilitated a very flexible partnership.

Getting college staff out to work with the employers is deemed critical, with staff from the college allowed to shadow teams at the Met Office at short notice. In return, Met Office employees give guest lectures to students and staff from their industry perspective.

Case Study 6 Blackpool and The Fylde College – business problems to be solved¹¹

When engaging with businesses at Blackpool and The Fylde College, the college's approach is to start by asking, 'what problem are you, the employer, trying to solve?' It is possible to approach any issue with a blank sheet of paper and to co-create the solution with the employer because all their teaching employees are dual professionals, with experience in both industry and learning and teaching. The college actively engages with over 1800 employers on The Fylde coast, across Lancashire and on a national basis. A successful example of this was the co-creation by Blackpool and The Fylde College, Lancaster University and BAE Systems of a degree programme for BA in project management. As well as having a material impact on BAE's bottom line, the college won a Queen's Award for this work in 2015. This approach to innovation is encouraged at all levels.

¹⁰ <https://exe-coll.ac.uk>

¹¹ <https://www.blackpool.ac.uk>

THEME 4 DATA AND KNOWLEDGE-SHARING

The dissemination of knowledge back into the collective innovation ecosystem is a major role played by institutions and places of learning. This can take the form of data sharing, technology demonstrations, open innovation programmes, open lectures etc. In the past, elements of this may have been referred to as 'knowledge transfer'. This activity consists of more than just transfer of knowledge. It is empowered by data-sharing, which is impacting how businesses are run, buildings are built, roads are designed, farms are worked and crops are grown. This research uncovered evidence of this data-sharing phenomenon, particularly in the agricultural colleges where agri-tech and precision farming are key focus areas.

Case Study 7 Bishop Burton College Data System¹²

Bishop Burton College is no stranger to working with farmers on research projects. Past projects have focused on animal feeds and animal behaviours. Now the college has moved on to look at big data which can be shared with farmers in the surrounding areas. Precision farming is a key development in the sector. With second-to-none technology in the college's tractor cabs, farming students are learning about using GPS systems which facilitate variable rate fertiliser and pesticide application, thus reducing inputs and ultimately improving sustainability. In parallel, they are engaging with robotic technologies such as drones which work independently in the field. Precision crop technology is being embraced by the sector, with larger farmers mapping the variability within fields to ensure better targeted crop nutrient and pesticide application.

To continue to promote innovation in the sector, Bishop Burton College has identified the need to systematically collect and share data with local farmers; this will improve the decision-making processes which drive improvements in the husbandry of animals and crops. With the growing influence of technology within the sector, farmers are often using new equipment in isolation from each other. An integrated approach to connect these machines and share data would further enhance the efficiency gains obtained from precision farming. Working with a software provider which can work with many different brands of machine is critical to the success of the current research and development activity at Bishop Burton College.

THEME 5 APPLIED RESEARCH

Whilst traditionally thought of as the mainstay of universities, many colleges are engaging in their own applied research programmes, with some offering education up to Masters and PhD level. Primary research with dedicated funding streams and the associated publishing of data in the form of academic literature and conference papers is already happening at some FE colleges. Importantly, this research, whilst fundamental in nature, is approached from a very practical perspective, in keeping with the FE model.

Warwickshire College Group is one such group of colleges with activities more typically associated with Universities. With two professors dedicated to agri-tech research and an associated Innovate UK grant, these colleges are leading the way for applied research in the FE sector.

¹² <https://www.bishopburton.ac.uk>

Case Study 8 Applied research at the Warwickshire College Group¹³

Reducing fungal fruit rot is a priority in strawberry production in the UK, because annual economic losses due to fungal rotting are approximately £30 to £60M per annum. Fruit rotting in strawberries is mainly caused by fungi. With most strawberry production carried out under protection, the risk of fungal rot largely depends on the occurrence of the fungi and the availability of susceptible fruit.

The current research project being carried out by researchers at the Warwickshire College Group is developing multiplex diagnostic tests for the onsite quantification of inoculum levels of the three main fungal pathogens that cause strawberry fruit rotting.

Development of rapid systems for sample processing and accurate estimation of the presence of each rot is a key output of the research. This will inform the prediction of the storability of batches of strawberries and will potentially reduce postharvest losses. Accurate risk prediction, and hence effective control of fruit rotting, is hampered by the difficulties in accurate and fast quantification of inoculum availability.

This project has developed a diagnostic device for semi-automatic quantification of multiple airborne strawberry pathogens. The device has been used to establish the relationship of both pre- and post-harvest rot risks and inoculum levels. This will extend the marketable shelf life of individual strawberry lots and reduce fruit waste.¹⁴

THEME 6 NETWORK FACILITATION VIA EVENTS

All of the colleges interviewed in this research realised the importance of facilitating their business network with the opportunity to meet and engage at events. These events ranged from public lectures and talks, coffee mornings, 'show and tell' displays, to Dragon's Den competitions. Events such as these have the desired outcome of formally bringing people from different organisations together so that they can cross-fertilise each other with new ideas. There is also an element of serendipity involved depending on the type of event and the participants who attend.

Case Study 9 Chichester College Group networking events¹⁵

The Chichester College Group (CCG) has hosted many internally-led events to prompt innovation activity. Examples include the launch of the Chichester College employer forums – a series of events dating back to 2017, where the College actively disseminated new information around apprenticeship changes and encouraged business feedback. These events naturally led to the development of employer boards, now known as the Skills Advisory Panels, where employers from a range of sectors come together to look at the latest industry needs and work in collaboration with the college to strategically plan and develop programmes for launch. This ensures the curriculum is industry relevant, while providing maximum opportunity for cross-sector approaches to programme launches. Examples where CCG has successfully delivered new programme innovations based on these events include the launch of apprenticeships such as Town Planning, Property Maintenance, Data Analysis, Composites Engineering and Sales Executive.

¹³ <https://wgc.ac.uk>

¹⁴ <http://landex-research.org.uk/agritech-solutions-for-predicting-post-harvest-spoilage-of-strawberries/>

¹⁵ <https://www.chichester.ac.uk>

Furthermore, CCG hosts regular networking events for all companies via their monthly Business Breakfast in collaboration with the local Chamber of Commerce. This provides further opportunity for businesses to cross-fertilise ideas, network and share practice. Their annual celebration of employer engagement pinpointed around careers and National Apprenticeship week reflects on the positive contributions made by employers, bringing all employers together at a celebration event. A further development of this annual event across the CCG is to add an awards-based approach to the celebration dinner in order to recognise significant and outstanding contributions by individual businesses in the network, giving employers greater aspiration and further encouraging participation in events that provide opportunities for productive networking.

Case Study 10 East Kent College networking¹⁶

EKC Group's Broadstairs College holds regular invitation-only networking events for employers from within the locality. These sessions give employers the opportunity not only to engage with one another, but also find out in greater detail what takes place within the college. During these events, which are hosted within the college's four-star training hotel, employers are given the chance to take a guided tour of the college to see its facilities in action and to meet some of its students. This style of event was developed after a number of employers expressed an interest in actually seeing students in action within the college setting, and finding out more about the educational environments and styles of learning students were receiving.

As part of these tours and networking opportunities, employers receive a presentation on a topic of wider interest to the local community. The events were developed in partnership with the area's Chamber of Commerce and a local IT solutions company. Employers are impressed by work within the college, and this has resulted in a number of positive student experiences. These events have also been successful in building strong collaborative relationships with sector-based anchor employers. One of these is a specialist recruitment company which developed a greater understanding of the skillsets students were developing within the college, and is now working alongside a curriculum area to deliver real-world sector experiences for students and to ensure that the curriculum is closely aligned with local skills gaps.

¹⁶ <https://www.ekcgroup.ac.uk>

SECTION 3 BUILDING A CULTURE OF INNOVATION – A COLLEGE-WIDE APPROACH

In section 2 we touched on the concept of 'culture of innovation' which ideally grows from both a top-down and bottom-up approach. The evolution of these approaches results in a culture where innovation is not just accepted but expected by everyone. It is a virtuous cycle which feeds positively into external relationships with employers and business partners. Students also benefit in this dynamic environment where they are encouraged to do things differently, think in new ways and deliver superior results. Being challenged early in their learning careers to think and work in this way is a habit that translates well into the workplace.

For colleges on this innovation journey, it is the activities and themes at the interface between the college and their business partners that will drive innovation in the businesses and in parallel, over time, improve the culture of innovation within the college.

This research showed several colleges where a strong culture of innovation exists. This culture has been built up over time and will continue to grow and improve in the future. For colleges looking at how to grow this culture of innovation in their own institution, the following case studies may be useful references.

Case Study 11 Blackpool and The Fylde college – a strong history of supporting innovation¹⁷

Blackpool College is no stranger to innovation. As early as the 1950s the technology behind the microwave oven was invented at Blackpool and The Fylde College and subsequently passed to GEC (General Electric Company). Today, the college takes a strategic approach to hiring key leaders with a background in industry who can pro-actively support innovation from the bottom up. The Executive and Strategic Management Team has many members with backgrounds in Business and Commerce. The college believes that this is key to driving engagement with employers as they speak the same language.

Case Study 12 Chichester College Group Innovation Strategy¹⁸

Chichester College Group has led with a top-down approach to fostering their culture of innovation. Through the use of a college-wide Innovation strategy, leaders are driving a strong culture of innovation in the organisation.

The group is committed to encouraging innovation through the introduction of new products and delivering efficiencies in processes. As part of this, they encourage well-judged risk-taking to try out new ways of working, leading to improved communication and better use of systems. By having an overt strategy, they are intentional about their support of driving a culture of innovation as well identifying how best practice can be shared.

Most of the college's innovation is in 'small projects' (defined as 10% improvement in the problem or increasing profit by 10%) although some significant system changes are planned to bring about larger benefits. Business support, commercial

¹⁷ <https://www.blackpool.ac.uk>

¹⁸ <https://www.chichester.ac.uk>

and curriculum teams are encouraged to discuss areas of innovation regularly at their team meetings. There is an incentive scheme to reward teams for the most innovative projects which have delivered significant impact for the group. Innovation is monitored at two points in the year and submitted to the Principal for review.

The results are clear to see, with 92% of staff in the recent staff survey agreeing that they are encouraged to take risks to try new things without fear of failure. There is a genuine culture of continuous improvement and innovation, large or small, which is very much encouraged.

SECTION 4 ENABLING INNOVATION – HOW TO MAKE IT WORK

There are some critical factors which influence how innovation happens within organisations and, as such, the success of innovation in any organisation has a number of common themes. The findings of this research are consistent with what is broadly seen in the global innovation ecosystem.

4.1 FACTORS WHICH INFLUENCE INNOVATION

This section describes in more detail each of the factors which influence innovation, and shares some best-in-class examples where relevant from the research.

4.1.1 *Strong and supportive leadership*

Having a strong and supportive leadership in any organisation enables innovation. Leaders who encourage others to try to think and work differently are critical to organisations that want to make innovation at all levels successful. Such leaders often give teams a certain level of autonomy to try new things, and make on-the-spot decisions with little or no review by their line management (see case study 12). It is this strength in leadership that shows a top-down culture of support, where staff feel enabled to try new things without fear of failure, thus encouraging the bottom-up response. It has been anecdotally observed in this research that a healthy appetite for risk usually goes hand-in-hand with a certain level of financial security in colleges.

4.1.2 *Environment that accepts and encourages failure*

For innovation to thrive, the environment needs to be one which accepts that failure is part of the learning cycle. In the college environment this can create a tension with the accountability framework that colleges are working to in terms of qualifications. Failure which is a learning experience and results in future success is a natural part of the innovation cycle. Strong and supportive leadership as described in section 4.1.1 accepts that failure may (or is likely to) happen. Clear messaging from leaders to this effect is needed, that is overtly say 'it is ok to try and to fail as long as something is learned in the process'. Google's '20% time' was a well-known innovation mechanism, allocated to all staff to work on personal projects during the working week. Some of the company's most successful innovations came through this mechanism: Gmail, Google Maps, Twitter, Slack, and Groupon all started as side-projects.

4.1.3 *Capacity to engage in innovation*

For many college staff, lack of capacity prevents them from innovating. Making time to think about new approaches is difficult for many. Conversely, great ideas don't just pop into peoples' heads, and most innovations happen after many months of percolating a new idea before finally bringing it to life.

This research showed that some colleges actively avoid engaging with the word 'innovation'. This is because it makes their staff feel uncomfortable, or makes them think they are being asked to do more than their day job. Despite this, many colleges said that their staff are innovative, whether they focus on it or not. Anecdotal evidence suggested that the staff who are most innovative are those with a personal passion for thinking in new ways. Those individuals make room to innovate on the side, in their own time.

4.1.4 Location

The location of an organisation can have an impact on how easy it is to innovate. Think of London for financial services, the San Francisco Bay Area for technology development, and Singapore for high-tech industry. On a more local level, the location of a college can also make a difference. For instance, when Chichester College Group expanded the college northwards, they entered the thriving economy of Crawley where there are many more businesses with their own innovation challenges. With 98% of firms in the region employing less than fifty people, it can be difficult for them to invest time in innovation, and this presents the college with a challenge and an opportunity to engage.

4.1.5 Strong teams with the right experience

Investing in teams is costly and can prove difficult. Hiring strong teams and having the right volume of great people is critical to making innovation successful. The team at Blackpool and The Fylde College shared their blueprint for success and their approach to hiring an executive team with industry experience (see case study 11). These members of staff have mostly come into the college at the end of their corporate careers and, for many, remuneration is not a critical factor. Recruitment of the right people needs to be seen as a long-term investment, given the appropriate time and resources to do so. Other colleges spoke about the importance of dual professionals with experience of both working in industry and teaching, and who bring a deeper understanding of their experiences into the classroom environment.

4.1.6 Formal processes to aid innovation

Many colleges shared their experiences of formal processes designed to help drive innovation in their organisations. These range from 'Dragon's Den' style pitching contests, dedicated innovation funds, and shared ownership of inventions to business plans. Each of these approaches has its own set of advantages and disadvantages. However, it is the act of having a formal process dedicated to finding new routes to innovation that drives the thinking forward. Most of the processes encourage applicants to think about the benefit of their work and to systematically think about where it might fail (an important activity in the early stages of innovation).

College leaders report a mixed benefit in using formal processes to aid innovation. Some said that initiatives like innovation funds are a big enabler, whereas conversely, the requirement to write a business plan can put off many staff from applying for support.

4.2 WHAT CAN POLICY DO TO ENABLE INNOVATION?

Enactment of strong policies can influence innovation in the FE sector. The Canadian FE sector exemplifies this. There, the government encourages colleges to work with SMEs to innovate and find solutions to problems, with a financial incentive offered for each solution implemented. With this overall infrastructure in place, it's easier for colleges to engage with innovation in a formal, lower-risk manner.

Because innovation in colleges in England usually focuses on shorter-term development projects, time can be a critical factor. How can the impact of incremental success be measured over longer periods of time?

One recommended route to helping colleges innovate is the provision of a specific fund with clear, well-defined outcomes where the resulting value can be measured. Organisations could come together regionally to work towards a bigger end goal, delivering the sum of the whole as a team. In order to execute this in practice, a hub of colleges could be given a dedicated grant fund. Defined outcomes needing to be delivered over a sustained period of time would be identified at the start of the programme.

Such a grant would fund small projects with desired predicted outcomes and would engage in well-defined, short-term action, bringing together colleges with SMEs and it could expect to drive high-impact outcomes over a series of funding cycles.

SECTION 5 CONCLUSION

Whilst innovation in colleges often focuses on curriculum, and innovation in business focuses on products, processes or services, it is at the interface of the two where the impact is seen. Innovation at the centre of the college–business relationship means that businesses gain the benefit of new ideas, approaches and ways of working from colleges. In parallel, the culture of innovation begins to grow organically in colleges as staff embrace new ways of working, and engage in innovative activities which ultimately help students to learn in new ways.

These foundational activities that colleges engage in drive innovation in businesses. Grouped together, the activities result in innovation themes such as the creation of physical hubs, provision of access to shared equipment, hands-on experience of teachers and students, data and knowledge sharing, applied research, consultancy and network creation. The themes identified in this research are consistent with those of the recent AOC survey on innovation.¹⁹

Colleges wishing to contribute further to innovation in businesses need to engage with these innovation themes and activities. In delivering these activities, working at the interface of the college and business results in new ideas, new ways of working and doing, and better outcomes for all participants. The themes identified in this report can be used as a guide to help direct colleges towards the specific activities they need to take part in to become more innovative.

This study has shown that even amongst colleges where there is innovation, there are different levels of commitment. For some, innovation activities are seen as high priority, for others they are not actively pursued. However, even in colleges with a low engagement with innovation, there can be individual members of staff who continue to work in innovative ways, without being formally recognised.

A culture of innovation starts to form in colleges when they engage with businesses to create a productive outcome. Traditionally, colleges have looked inwards, focusing innovation on pedagogy and curriculum. Today many colleges are looking outwards, working in partnership in an open innovation model to support innovation in businesses. More of this is needed to have an impact on these businesses and the economy. This report has shared a selection of examples and case studies where the open innovation model of working with businesses external to the college has had a positive outcome for both parties.

For innovation to take place, the whole college mindset and culture does not have to change. To start with, committed individuals can take a bottom-up approach, with the support of dedicated top-down leadership. Such colleges where a few individuals are pro-actively supporting an innovative approach can still be successful in positively influencing the businesses they work with.

For the most part colleges respond to priorities set by funding. Given this, it is no surprise that with little funding to support innovation work with businesses, most innovation is focussed on the curriculum. The colleges that manage to support innovation in businesses do so largely outside the accountability framework which relies on measures of learner performance. If government wants to support

¹⁹ <https://www.aoc.co.uk/news/colleges-best-placed-lead-business-and-skills-innovation-revolution>

colleges to play a more significant role in the innovation landscape, it will need to develop a different form of accountability which enables colleges to take risks and which rewards innovation that drives business performance.

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