

FUTUREquipped

A College - Innovation Centre Pilot Programme

End of programme report

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Funded by:



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Promoting further and higher education

Designed and delivered
in collaboration by:

CONSTRUCTION
SCOTLAND
INNOVATION
CENTRE



DIGITAL
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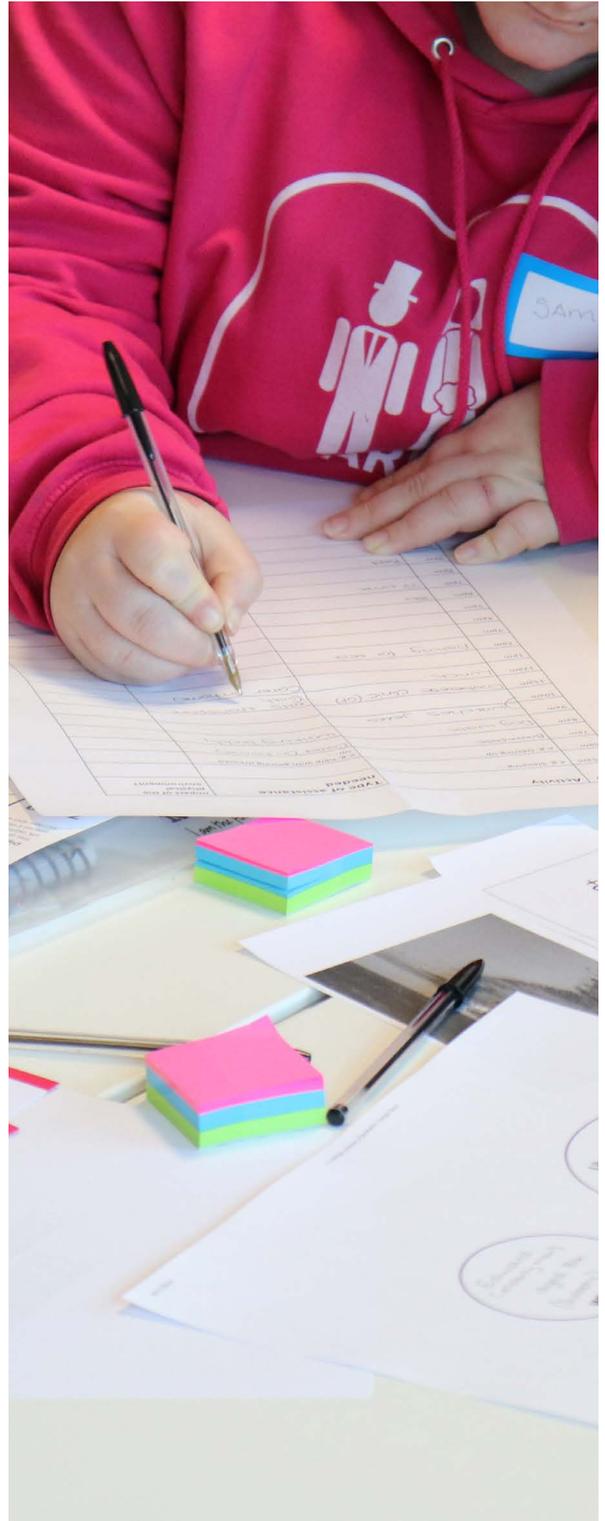
Introduction

FUTUREquipped (FEq) was a 12-month pilot project which explored how Scotland's further education (FE) colleges and innovation centres can work together to increase business innovation. It also aimed to improve the colleges' understanding of the future skills needs of the Scottish workforce.

Funded by the Scottish Funding Council (SFC), FEq was led by two of Scotland's eight Innovation Centres (ICs), the Construction Scotland Innovation Centre¹ (CSIC) and the Digital Health and Care Institute² (DHI). Launched to support transformational collaboration between academia and businesses, the IC programme³ aims to create jobs and grow the economy by enhancing innovation and entrepreneurship across Scotland's key economic sectors.

FEq also involved 13 FE colleges, a further two innovation centres – The Data Lab and Centre for Sensor and Imaging Systems (CENSIS) – and a pool of industry and education stakeholders who have provided input and support. It is the largest collaboration to date between the IC programme and the FE sector, with over 500 students and 30 college lecturers participating.

This report outlines FEq's successes, challenges and learnings, and offers recommendations to support the continuation and growth of future business, college and IC innovation collaborations.



¹ <http://www.cs-ic.org/>

² <https://dhi-scotland.com/>

³ <https://www.innovationcentres.scot/>

Methodology

FEq focused on testing and evaluating the effectiveness and long-term sustainability of different models of college/innovation centre collaboration.

Three distinct workstreams were developed, focusing on the natural connection between health and care, construction and information technology - the emerging trends of smart housing.

- Workstream 1 - Innovation integration - College Lecturers
- Workstream 2 - Innovation exposure - College Students
- Workstream 3 - Innovation support - Businesses and Colleges

Workstream 1 - Innovation integration - College Lecturers

The aims of workstream 1 (WS1) were:

- to upskill college lecturers in emerging innovations and industry trends;
 - to provide an opportunity for interdisciplinary collaboration between colleges; and
 - for lecturers to disseminate newly acquired knowledge within their colleges.
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Between April and August 2018, a 5-day programme of activity was developed. This was a collaborative process involving industry, IC and college representatives, who were brought together to share ideas and feedback on the programme design.

The resulting programme (detailed in table 1) was delivered over a 6-week period in August and September 2018.

	Day 1	Day 2	Day 3	Day 4	Day 5
Date	Tue 21st and Wed 22nd August		Tuesday 4th September	Wednesday 12th September	Wednesday 26th September
location	CSIC - Hamilton		DHI @ Strathclyde	Dunfermline, CCC	COSLA, Edinburgh
Theme for the day	College Innovation - Where are we now?	College Innovation - Let's innovate (Individual Sector view)	College Innovation - Lets Innovate (Multi-sector view)	College Innovation - WS2 Planning	Finalising and presenting approaches to the delivery of a 20-hour unit
Sectoral Exposure	All sectors	Construction (+ ICT)	Digital Health and Care (+ ICT)	All sectors	All Sectors

Table 1 - Workstream 1 - 5-day programme

An overarching project was also devised to allow participants to collaborate with colleagues from all 13 participating colleges across the disciplines of health, construction and ICT. This led to the creation of a micro-learning library, offering a bite-sized overview of smart housing from the perspective of three distinct industry sectors. Complementary future skills⁴ and approaches to the delivery and assessment of a newly developed SCQF level 6 unit were also considered.

The project provided a basis for lecturers to collaborate and repackage their newly acquired knowledge into a format that could be easily shared with college students during workstream 2.

⁴ https://www.skillsdevelopmentscotland.co.uk/media/44684/skills-40_a-skills-model.pdf

Workstream 2 - Innovation exposure - College Students

Workstream 2 (WS2) was the next logical step, where participating WS1 lecturers would integrate their newly developed learning content into their existing curriculum and classes.

Over 500 students across participating colleges and partner schools took part in a series of micro-learning modules covering content and topics generated during WS 1.

In addition, over 150 students and college staff took part in a series of four full-day workshops, which focused on providing:

- exposure to the participating innovation centres;
- exposure to emerging trends and technologies relating to the health and care, construction and IT sectors; and
- the opportunity to work collaboratively with students from other disciplines and colleges on a person-centred design task.

Workstream 3 - Innovation support - Businesses and Colleges

Workstream 3 saw staff from three Scottish colleges – North Highland College, West Lothian College and City of Glasgow College – collaborate with business partners on real-world innovation projects relating to smart technology and assisted living.

The projects provided participating colleges with experience of:

- leading on business innovation activity;
- helping to develop and/or exploit capabilities in research;
- product design and ideation;
- minimum viable product development; and
- proof-of-concept reporting.





Project 1

North Highland College worked with Norscot⁵ on a proof-of-concept report to explore an app that would support improved health and wellbeing by capturing air quality data within existing and new build homes.

This involved:

- an explorative literature review to support proof-of-concept;
- extensive collaboration between college staff, Norscot and the FEq project team; and
- provision of app development, consultancy from City of Glasgow College.

Project 2

A cross-disciplinary team of lecturing staff from West Lothian College worked alongside service design, innovation and inclusion managers from Link Housing⁶ to conduct a research project exploring the potential return on investment when adapting existing housing stock for those in need of supported living provision. They compared this with the costs and implications of future-proofing new homes at the design/build stage.

The outputs of this project were:

- a report outlining current and emerging policy in relation to social housing and adaptation;
- industry intelligence around adaptations for supported living; and
- recommendations for future practice in relation to technology adoption, future proofing and adaptations.

⁵ <http://www.norscot.co.uk/>

⁶ <https://linkhousing.org.uk/>

Successes and benefits

Headline successes and benefits of the FEq programme include:

Workstream 1

- A total of 50 participants, including seven from industry, 11 from the Innovation Centres, 29 from colleges, one from university, one from Scottish Government and three from SFC.
- There was an 87% attendance rate across the 5-day programme.
- There was a 65% net increase in lecturers' perceived ability to design their curriculum in response to industry needs, emerging technologies and innovation.
- 30+ pieces of bespoke micro-learning content relating to smart housing were produced and disseminated across participating colleges.
- After a review and editorial process, just over half of these have made it into the final cut into a Micro-learning library that will be made available to colleges in the autumn of 2019.

Workstream 2

- Over 500 students across 13 colleges engaged in learning experiences relating to the topics of smart housing, future skills, innovation and person-centric design.
- 78%⁷ of participating students gained their first opportunity to engage in interdisciplinary learning.
- New intra-college communities were developed to support the delivery of interdisciplinary learning during and after the FEq programme.

Workstream 3

- Different research was carried out in relation to social and private sector housing in Scotland.
- Proof-of-concept and minimum viable product development took place for a new app that will have a positive commercial impact on the business partner, as well as the wider social benefits of supporting autonomous living and increased energy efficiency.
- Opportunities to engage the student population in live action research projects were realised.

⁷ Based on a sample of 129 students participating in one of four off-campus exposure events

Challenges, observations and learning during FEq

Opportunities for college sector/ business relations

Colleges, through their close links with regional and national businesses, local authorities and economic development agencies, are very well positioned to identify opportunities for business-led innovation collaborations.

Positive impact of business - college collaboration on the student experience

The project has resulted in the opportunity to support business innovation and use the resulting knowledge in learning and teaching practice. This should be considered a major driver for the continued support and growth of business-college innovation activity.

Human resources for special project activity

A lack of capacity for special project activity is one of the biggest barriers to colleges taking a more active role in business innovation activity.

Current awareness of the Innovation Centre programme

The FEq project delivered a significant increase in participants' awareness of the Innovation Centre programme in Scotland, but also highlighted a relatively low baseline of awareness amongst participating staff and students.

Systemic barriers to agile curriculum development

Over the course of Workstream 1, the rigidity of underlying qualifications was frequently highlighted as a barrier to developing and implementing a new and innovative curriculum.

Challenges discussed included the lengthy development cycles for qualifications, which can extend over several years, as well as internal quality assurance (QA) processes which add an additional layer of administration.

While there was a widespread acceptance of the need to ensure an appropriate level of QA across the college curriculum, participants felt a more streamlined and innovative approach to qualification development would help ensure the curriculum could be responsive and agile in a rapidly changing economy.

Recommendations

Creating flexibility to support innovation in the college sector

Innovation activity carries with it an inevitable degree of uncertainty⁸. This can be at odds with the risk aversion often displayed by public sector organisations.⁹

For colleges to take a more meaningful role in innovation, there needs to be more flexibility. Staff need time to work creatively and entrepreneurially to identify, develop and deliver on meaningful innovations in collaboration with local industry.

Colleges could be encouraged and supported, both financially and through appropriate leadership, to increase the freedom and flexibility of appropriate staff, which would be particularly useful for subject specialists who might lead on the technical specific elements of innovation partnerships.

Ways to increase innovation around qualifications and teaching methods should be explored and facilitated, as part of sector level partnerships where there is a defined mandate to support it. This could include:

1. Working with awarding bodies to reduce the lead times around qualification development, future-proofing the curriculum and delivering new curriculum on a just-in-time basis.
2. Working with employers to identify current and emerging skills needs and responding with just-in-time curriculum on a bespoke or core delivery level.

Improvements in knowledge management

Knowledge management is a critical aspect of the innovation process¹⁰ which determines organisational performance. Despite this, most participating colleges did not appear to have any formal or informal knowledge management processes in place. Further work to understand the current capability across in this area is recommended.

Potential actions could include:

- Development of a sector-level knowledge exchange forum through which current best practice in innovation can be captured and disseminated.
- Sector level bodies like College Development Network¹¹ could play an active role in FE sector forums, with innovation centres participating at an industry specific level. The purpose of such groups would be to foster a culture of open innovation where colleges share intelligence, best practice and work to increase the baseline innovative capability across the sector.
- Provision of innovation training to leaders and key staff.

Increased levels of IC-college outreach activity

There is considerable opportunity to increase awareness of and engagement

with the IC programme and the wider innovation agenda amongst college staff and students.

Currently the IC programme supports innovation in education, but to date this has mainly focused on upper SCQF levels via the postgraduate scholarship programmes. FEq has highlighted the potential and rationale for increased levels of engagement and early interventions during lower SCQF level programmes.

This could be achieved via:

1. An increased programme of outreach activity and college/school engagement

to raise awareness of innovation and the future of skills and work.

2. ICs working with businesses and colleges to identify and respond to emerging industry skills requirements.

Increased opportunities for interdisciplinary learning

Interdisciplinary learning (IDL) is a vital way to prepare students for the complexities facing them in the real world¹², yet only 6% of Workstream 2 participants¹³ were regularly given this opportunity.

⁸ LAWSON, B; SAMSON, D. (2001) 'Developing innovation capability in organizations: a dynamic capabilities approach', *International Journal of Innovation Management*, vol. 5, pp. 377–400 https://pmt-eu.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=TN_worldscientific_sS1363919601000427&context=PC&vid=44OPN_VU1&search_scope=EVERYTHING&tab=default_tab&lang=en_US

⁹ VINCENT, J (1996) "Managing risk in public services: A review of the international literature", *International Journal of Public Sector Management*, Vol. 9 Issue: 2, pp.57-64, <https://doi.org/10.1108/09513559610119564>

¹⁰ MUQUDAS, F, REHMAN, M; ASLAM, U; Ur-RAHMAN, U (2017) "Exploring the challenges, trends and issues for knowledge sharing: A study on employees in public sector universities", *VINE Journal of Information and Knowledge Management Systems*, Vol. 47 Issue: 1, pp.2-15, <https://doi.org/10.1108/VJKMS-06-2016-0036>

¹¹ <https://www.cdn.ac.uk/>

¹² Nandan Monica, London Manuel, (2013) "Interdisciplinary professional education: Training college students for collaborative social change", *Education + Training*, Vol. 55 Issue: 8/9, pp.815-835, <https://doi.org/10.1108/ET-06-2013-0078>

¹³ Based on a sample of 129 students

Colleges are therefore encouraged to increase the opportunities for IDL, across faculties and at an inter-college level. Where feasible, IDL activity could be incorporated into existing delivery and assessment plans, in order to reduce additional workload and support greater adoption.

Similarly, taking up the opportunity for pre-verification of assessments via awarding bodies such as the Scottish Qualifications Authority (SQA) could help identify and manage any quality assurance risks arising from innovative approaches.

Innovation Centres and supporting agencies could lead on the development and delivery of CPD and training support for IDL activity throughout the college sector. Furthermore, existing resources such as the Scottish Institute of Enterprise¹⁴ could be engaged to support higher levels of cross-college, peer-to-peer innovation and interdisciplinary learning.

Conclusion

It is evident through the workstream and project outputs that there is an appetite within the FE sector and the Innovation Centres to collaborate in driving innovation through teaching and learning.

It is also clear, however, that the potential barriers to this should be addressed, with solutions explored and implemented to ensure ongoing innovation is embedded in order to deliver the skills and technologies required to stimulate and sustain the construction sector.

For further information of the FUTUREquipped project, please contact: hello@cs-ic.org for Construction Scotland Innovation Centre www.cs-ic.org hello@dhi-scotland.com for the Digital Health and Care Institute www.dhi-scotland.com

¹⁴ <https://www.sie.ac.uk/>