

# DIGITAL PROGRESSION IN SCOTLAND'S COLLEGES

**AN INSIGHT REPORT FROM THE CDN  
RESEARCH AND ENHANCEMENT CENTRE**

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# 1. REPORT AIMS AND CONTEXT:

## THE DIGITAL LANDSCAPE IN SCOTLAND'S COLLEGES

### Report Outline / Aims

This report has been commissioned to present examples of good practice from Scotland's colleges with a view to outlining the opportunities and constraints to mainstreaming innovative digital learning practice within the sector.

Through the presentation of case studies, this report will also outline types of staffing and resource colleges are investing in to develop their digital delivery, at both institutional and subject level before concluding with the identification of key areas for development in the short and medium term.

### Context: The Digital Landscape in Scotland's Colleges

In 2021 The Scottish Funding Council's Coherence and Sustainability Review of Tertiary Education outlined that future student expectations surrounding blended learning necessitated that every educational institution learning pedagogy as a core strategy (SFC, 2021).

JISC continue to lead on "Supporting the digital revolution for learners" which will culminate in the development of national standards for online and blended learning.

In the interim period, Scotland's Colleges continue to pursue their digital ambitions and this insight report will contain a range of case studies, highlighting the ongoing work across the sector.

The rapid transition to online learning in 2020 illustrated the resilience and adaptability of Scotland's Colleges. Despite considerable advancement being made in developing core skills around the creation and delivery of online programmes, students reported the quality of their experience was variable. Evidence suggests mixed levels of staff capability and confidence to adopt cutting edge digital approaches. (SFC, 2021.) With this in mind, a transition in approach is required from that of attaining digital skills in order to offer more of an online approach to learning, to the development of learning pedagogies to suit more advanced digital skills and literacies in staff and students.

Beyond this, Education Scotland's Engagement in Scotland's Colleges Overview Report 2021/22, identified that most colleges recognised that learners on full-time FE programmes are more likely to find remote learning challenging (Education Scotland, 2022).



This points towards the need for broader support provision for these learner profiles, including (but not exclusively) digital accessibility and welfare / pastoral support. At FTFE (full-time Further Education) level, learners undertaking programmes with practical content report frustrations surrounding the substitution of face-to-face delivery with remote / blended learning which may be a contributing factor in reported further withdrawal and attainment rates at this level.

With the GTCS Professional Standards for Lecturers (2020) having a very strong digital theme within all 3 elements (Professional values, Professional Knowledge and Understanding, and Professional practice), the sector is well placed to continue embracing the opportunities afforded by advancement and knowledge exchange in digital pedagogies and technologies. The COVID-19 pandemic has undoubtedly accelerated growth in the digital learning arena but with this rapid acceleration coming against the backdrop of a crisis, it is important to ensure structure and continuity of the learning experience to meet the current and future demands of students.

This insight report aims to provide examples of areas where Colleges have celebrated digital success, with the aim of generating further dialogue, on this theme and inspiring future digital advancements in the sector.

## 2 CASE STUDY 1: LEARNING TECHNOLOGIES

### Edinburgh College: Dementia Care VR Programme and Digital Care Hub

#### Rationale

As a key player in the economic ecosystem of Edinburgh and the Lothians, Edinburgh College has an important role to play in ensuring skills supply and skills demand align in the local labour market. Two specific challenges faced by students studying in the care sector provided an opportunity for digital solutions to be considered as part of its efforts to fulfil this role. Firstly, the ongoing skills shortages in the care sector itself, and secondly the need to ensure more students would be able to access interactive digital learning to build confidence and provide a simulated experience to support the practical experience gained on work placements.

In response, Edinburgh College, working in partnership with the University of Edinburgh, conceptualised a vision for a Digital Care Hub, driven by a determination to provide a learning space that would inspire students and foster skills and knowledge that could promote career pathways that respond to the national health and care crisis. The project went on to win CDN's Digital Learning Award in 2022.

#### Synopsis

Edinburgh College worked in partnership with technology company Cadpeople to create a bespoke software programme through the use of Virtual Reality (VR) to deliver a key SQA Module in Dementia Care.



The Dementia Care VR programme is one of a number of initiatives that make up Edinburgh College's ambitious Digital Care Hub project which was set up against the backdrop of national skills gaps and challenges in the care sector. This helped rationalise the design of the space, with priority around the provision of facilities to provide learning opportunities against the context of technology-enabled care. The physical space contains a replica medical ward with patient room, toilet and wet room facilities; an infection control and decontamination area; a reflection room and a care at home room. Realistic patient simulators within the hub enable students to develop patient testing and care skills in a variety of care settings.

The development of the state-of-the-art facility and VR programme was set up with the aim of transforming teaching practices and providing students with an enhanced learning experience, in line with the commitment in Edinburgh College's 2020-2025 Digital Strategy, that "the use of digital technologies will continue to become a key defining feature of the College's performance and is critical to 'future proofing' our curriculum" (Edinburgh College, 2020).

The Digital Care Hub exposes students to many specialisms and skills challenges that equip them for a rapidly changing sector. Dementia care has been a national priority in Scotland since 2007 and, accordingly, dementia care is a priority skill development area within the social services curriculum at Edinburgh College.

By partnering with Cadpeople, Edinburgh College investigated the use of Virtual Reality to provide a more immersive experience that would prepare students for working with those living with dementia in our communities. This approach expanded the potential to equip students with both theoretical knowledge and practical skills in the classroom environment in a way that would complement the experience gained while on work placement.

Subject matter experts from Edinburgh College with senior experience in dementia care settings collaborated with developers at Cadpeople to design the learning content which included the collation of real-life interviews from people they knew living with dementia, adding invaluable first-hand knowledge and an extremely empathetic element to the VR experience. Of upmost importance was ensuring the learning content was designed to align with the course material and the module learning objectives for an accredited Caring for People with Dementia unit. This ensured that the final solution would have a real impact on the students across the health and care curriculum.

## Evaluation and Impact

For students and regional employers, the impact of this project cannot be underestimated. Introducing learners to an immersive programme that can be integrated with relevance across the health,



social services, dental, pharmacy and counselling curriculum, enables them to build their skills working in a classroom environment fit for the digital age. The VR Dementia Experience has been the catalyst for providing hundreds of students (from SCQF levels 4-7) with a valuable insight into what it's like to live with dementia and how it can affect someone's life, while also giving them the opportunity to learn how best to care for these individuals as part of their course. The profile of students benefitting from this use of technology ranged from School College Partnership courses to those taking part in short courses to upskill or retrain.

By being able to co-design the learning content from scratch, the embedding of meta skills has also been a key consideration, meaning learning activities around the VR programme were able to foster communication skills, confidence and curiosity that previously were difficult to achieve in a classroom setting. Within the VR learning space, there is also a 'soft area' for reflection and processing, which helps support the concepts of accountability, integrity, and professional values for future careers in health and care.

The College invited key stakeholders, including health and social care partnerships, government ministers, colleges and universities, to tour the facility, providing them with an opportunity to see first-hand students working with the technology and giving them an insight into the potential for it to be used to foster new collaborations that will enhance training and address the skills shortage regionally and nationally.

*'The VR Dementia programme is interesting because you get to experience life from someone else's perspective. It has given me a good insight into the challenges faced by someone experiencing dementia and it has really inspired me to look further into both dementia and the brain in my studies.'*

SCP Higher Health and Social Care student.

## Lessons to take forward

The Digital Care Hub facility provides active learning challenges for students that responds to sector skills gaps and labour market requirements. Due to Scotland's ageing population and to protect frontline services, the number of people forecast to be employed in the sector regionally is required to increase by 3,400 by 2024 and a further 7,800 from 2024 – 2031 (SDS, 2022). This shows the urgent demand for fully qualified health and social care professionals across the sector.

The example of the VR in dementia case study is a terrific benchmark for the co-design of learning content to enhance the student experience, offering agility in pedagogical approaches to skills and training methodologies, which is vital to meet the recruitment drive the sector is embarking on to provide a highly skilled workforce to support an ageing population. The case study provides an insight into how a VR component can be integrated into curriculum delivery in a broader, innovative digital learning environment and highlights the potential for expanding this approach to other subject areas and learning environments.



### 3. CASE STUDY 2: LEARNING TECHNOLOGIES (STUDENT AND INDUSTRY ENGAGEMENT)

#### **Glasgow Kelvin College: Supporting Students and SMEs by Making Jewellery in a Digital World**

##### **Rationale**

The Jewellery curriculum provision at Glasgow Kelvin College has traditionally been fully delivered face to face on campus. With two well-equipped Jewellery workshops, this provides excellent facilities for students to develop the hand skills required for bespoke jewellery production.

However, with the onset of the Covid pandemic, restrictions were placed on onsite learning whereby only essential activities, with reduced numbers, were permitted with on campus to reduce health risks. This meant that to continue jewellery provision during this period, staff at Glasgow Kelvin College needed to innovate to make greater use of digital techniques to replicate the onsite experience virtually.

##### **Synopsis**

The staff at Glasgow Kelvin College reflected on their own literacies of the digital tools that would be appropriate to support an effective blended provision and, with the support of ICT colleagues at the college, embarked on the integration of a series of solutions that could help achieve this.

Firstly, the jewellery team purchased high resolution camera headsets which allowed the instructors to broadcast magnified shots of close hand design work. Immediately, this facilitated the recording of practical demonstrations in high definition and the storing, and sharing of video across class groups, as well as allowing the potential to switch between online materials and live streaming involving the use of high-definition cameras. This approach enabled students to study the required skills prior to attending college, meaning that when onsite to undertake practical work, they were able to make maximum use of their more limited workshop access. These instructional videos and supporting notes were recorded and available for repeated viewing supporting the consolidation of learning. The use of this flipped classroom model meant learners could access materials online before the class/workshop so that they were then better able to engage with the tutor during classes on issues specific to them.

Secondly, the team supported students to develop CAD skills which enabled students to design jewellery in a virtual environment. Once jewellery products were designed, students were able to produce rapid prototypes using 3-D printers.



Using these provided the students with industry relevant skills which are transferrable across a range of manufacturing industries.

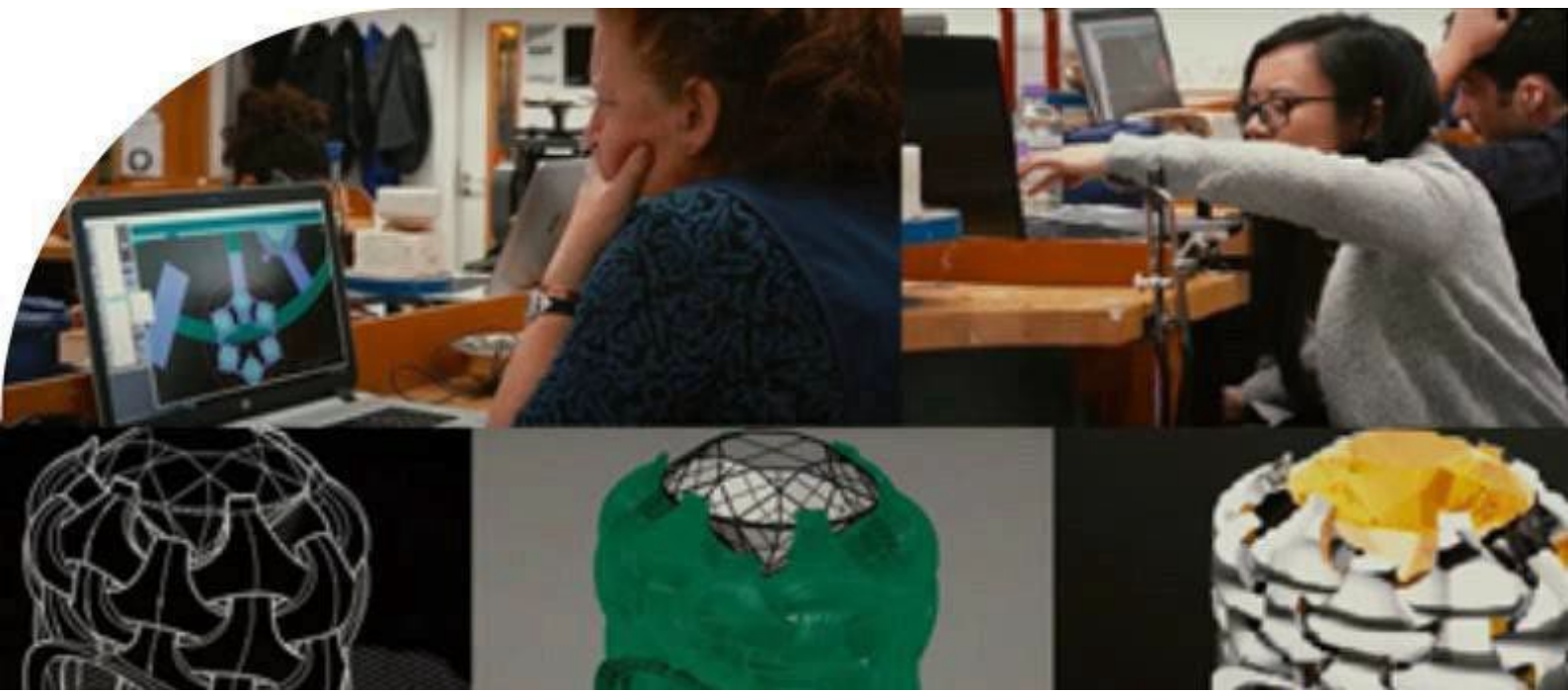
Thirdly, the college invested in cloud based remote server access. This gave students 24/7 access to high quality data streaming, enabling students to access CAD level computing power from their local device.

These three approaches enabled all learners in this area to gain the skills required to complete their course successfully, despite a significant reduction in access to workshops over the year. The ability to share detailed work in a live setting also supports learners who cannot attend a particular workshop session. Those who attend virtually can still pose a question to the tutor live, with the tutor able to share a detailed view of the solution/ technique with the whole group in real time. This not only supports full time learners unable to attend a session but enhances access for those who might wish to participate on a part-time basis. Glasgow Kelvin's approach to "Making Jewellery in a Digital World" was "highly commended" at CDN's 2022 College Awards.

## Evaluation and Impact

Whilst this model has evolved with a Jewellery focus, the tools used were easily adapted for use in other areas of the college that required a similar pedagogical approach. The demonstrable success of the model, supported by Glasgow Kelvin College's strategy, has seen further investment made in hybrid teaching spaces across several areas of the College including Jewellery workshops, recording studios, and performance spaces. Whilst each of these spaces have specific equipment relative to the needs of the respective disciplines, the pedagogical approach to hybrid learning helps facilitate synchronous/asynchronous delivery, giving students more accountability and flexibility in their approach to their studies out with designated workshop time.

With greater flexibility in the delivery model offered using digital technologies, having specialist workshops and workstations is no longer a limiting factor to class size numbers, with Glasgow Kelvin College now able to recruit a second jewellery cohort in tandem without doubling the equipment/space requirements.





Classes can make effective use of lecturer/ assessor time when timetabled for face-to-face delivery with much of the blended learning material and demonstrations being able to be accessed by students at the point of need rather than repeated by lecturers/assessors.

With most jewellery business across the UK being SMEs/Micro businesses, there is a significant financial burden for them to consider investing in some newer technologies such as CAD and 3D printing/casting. By engaging with Glasgow Kelvin College, local businesses have had access to these technologies allowing them to not only upskill through the practical use of these technologies but also to evaluate whether investment in this technology would be worthwhile for their business. Partnering in this way has also increased local business awareness of the College as a source of work-ready learners that are already able to use these tools and work independently in a hybrid setting. Engaging with businesses in this manner has also provided the curriculum team with a deeper understanding of the skills needs of local jewellery businesses through an informal industry advisory group which, in turn, can inform curriculum design into the future. The new delivery model itself greatly reduces the impact on learners who miss workshop sessions and can be used to aid retention.

It also offers further participation opportunities for those seeking to engage on a part-time basis and widens the scope for commercial working. Through this model, the College has also deepened its links with industry, supporting local businesses to upskill, make more informed business decisions, and expanding the scope for industry to shape the curriculum, as well as making learners more aware of employment opportunities locally.

### Lessons to take forward

Although life in the jewellery department has largely returned to on-campus delivery, staff continue to deploy and develop the various techniques to great effect. For example, CAD classes for higher level students are now routinely delivered remotely and at times in the week where students may only be timetabled for a half-day session. This has the clear advantage of avoiding unnecessary travel and has become popular with students as demonstrated by improved timekeeping and attendance when compared to some on-campus activity. Specialist cloud software licenses and a remote desktop are now routinely deployed to deliver these classes which continue to be fully supported with short duration video content captured in HD and carefully edited to achieve maximum impact. Staff have continued to develop and improve their skills in the production of video materials and these now cover a much wider range of the curriculum and are increasingly now 'curated' into a video archive which is shared over MS Teams, providing ease of access for current and future students.

In addition to supporting full time students, the opportunity to engage further part-time students has increased industry engagement through upskilling opportunities for micro-businesses. This has seen Glasgow Kelvin College being used as a civic anchor to local businesses in the Jewellery field, supporting their digital transformation through the opportunities and digital infrastructure provided by the college.

## 4. CASE STUDY 3: INFRASTRUCTURE AND PLATFORMS

### Fife College: Adapting WordPress (WP) for use as an ePortfolio

#### Rationale

Learners at Fife College were experiencing frustrations with an adopted 'off the shelf' digital portfolio system that student feedback suggested:

- was not fit for purpose,
- was not intuitive and user friendly.
- lacked opportunities for customisation.

Despite students being able to use the legacy platform, Fife College saw the need to develop an enhanced portfolio platform that learners could use to collate evidence of their digital capabilities and present examples of their course work, which they could retain as a ready-made, easily accessible digital portfolio.

#### Synopsis

Fife College have been using WordPress to deliver a tailored digital portfolio platform to students. 'MyPortfolio', developed in-house by Fife College digital learning staff, allows learners to customise the look and feel of their own portfolio and to upload a range of media including blogs, images, and videos, depending on their area of study and the type of content they are interested in. MyPortfolio has been specifically designed to be simple, intuitive and user friendly providing a seamless experience for learners, helping improve their learning experience.

The various possibilities within the application, such as the ability to produce their own website, also allows learners to gain experience of a content management system, a useful transferrable skill, both for those looking to move into employment and for those who wish to develop their own business.

In a project that spanned one year, the College's Digital Learning team began by discussing the frustrations with the existing system both as a team and with its service users, including teaching staff. On gaining an understanding of the issues and insight into what learners and teaching staff wanted from a digital portfolio, they were able to begin developing a suitable platform. A lot of thought, care and effort went into the functionality, security and in making the user experience the highest priority.

The platform itself is a curated environment of WordPress, one of the world's most popular content management systems (CMS). Using a familiar platform such as this has many advantages. Not only is it functionally easy to use and customise, but it also allows learners to leave college with experience in using a well-known CMS.

The open-source platform has been designed to be suitable for everyone, irrespective of their current ability and can be used by both the novice user and the high-end creative who wishes to customise/develop an enhanced portfolio. Learners can share it out with the college to show to university admissions teams or employers. MyPortfolio has also been built in such a way that means students can choose to build their own WordPress website using all the media they have gathered there during their time at college.

MyPortfolio was piloted by 200 learners, spanning both written based subjects such as psychology and social sciences, as well as hands-on creative subjects such as fashion and beauty. The decision to test across a range of subjects as opposed to just one was made to help test the adaptability of the platform and to ensure the team were confident it was fit for multiple purposes and courses throughout the college, and not just built with one subject area in mind.

## Evaluation and Impact

The outcome is a fully functioning, intuitive, customisable, mobile responsive platform which can be used during the learners' time at college and as a portfolio of work they can then take with them when progressing on to their next positive destination.

To evaluate the platform, the College's Digital Learning team sought feedback from users, both through their lecturer and directly. The feedback gathered has been overwhelmingly positive with learners describing MyPortfolio as a 'breath of fresh air'. This appears testament to the research and thought put in at the initial scoping

stage to ensure production of a tailored, fit for purpose solution. Facilitation sessions demonstrated the simplicity of the MyPortfolio's use, with learners from the initial pilot quickly able to populate their entire portfolio.

Given the success of the pilot, MyPortfolio will be rolled out to all Fife College learners, with evaluation continuing alongside this process, allowing the Digital Learning Team to further refine the platform. As this has been custom built in Fife College, by Fife College, changes can be easily made without any cost to the college, something increasingly important given ongoing pressure on college finances.

## Lessons to take forward

There were many factors that contributed to the success of MyPortfolio but one that was perceived to be crucial was the focus on directly tackling the difficulties that learners were experiencing, which in turn, facilitated the development of a product that was designed to meet the needs of the end user, with considerable attention paid to usability and user experience.

Simplicity was a key stakeholder requirement and lots of development work went into ensuring the end product was designed with this in mind, irrespective of the digital literacies and skills of the end user.

Use of MyPortfolio simultaneously provided learners with a customised digital portfolio system whilst also developing their digital capabilities through learning about WordPress and the realms of content management systems.

The open-source community provided developers with a range of tools to simplify and enhance the user experience and this is a key factor to be considered in keeping MyPortfolio relevant and to meet the future needs of its users.



Having appropriately trained and knowledgeable learning technologists / developers is key to maintaining this level of in-house competence. Learning technologists / developers themselves become even more influential partners in the student journey by going into classes / hosting online sessions to facilitate the use of MyPortfolio as well as raising awareness of security features and promoting optimisation of the platform.

There are huge opportunities for diversifying the skill set of partners involved in the development of MyPortfolio to provide consultancy, training, and installation in other college sites as well as its appeal to a broader audience in the education and continuing professional development fields.

Lecturing staff at Fife College are now using MyPortfolio to showcase student coursework at school and recruitment events which is a welcome addition to the tools already in place to inspire prospective applicants and promote course content to them.

## 5. CASE STUDY 4: STAFF TRAINING/CPD (LITERACY/SKILLS)

### Forth Valley College: Learning and Digital Skills Academy

#### Rationale

Forth Valley College's Learning and Digital Skills Academy was set up in response to the challenges faced by the college sector in responding to the need for fast-paced digital advancement, both in curriculum and support provision. The Academy's vision, laid out in a detailed Ambition Document<sup>1</sup>, is to digitally empower staff, by providing an effective mechanism to facilitate digital skills development and to build the foundations to ensure Forth Valley College is at the forefront of excellence in contemporary learning and teaching practice.

#### Synopsis

The Learning and Digital Skills Academy works cross-college to support academic and corporate services staff to drive the development of digital skills for all. In 2023, the focus remains firmly fixed on supporting staff to provide the best teaching and support service they can, through use of complementary digital technology to enhance learner and stakeholder experience.

The Learning and Digital Skills Academy is a small team with diverse skills sets that has made an impact in a relatively short space of time.

<sup>1</sup> <https://www.forthvalley.ac.uk/media/7046/cm1047-learning-digital-skills-academy-booklet.pdf>

Over the past year the team has mentored more than 100 staff and responded to over 2500 support and coaching queries from both curriculum and corporate services areas. This support allows academic staff to enhance teaching through use of digital technology and to achieve professional qualifications, including SQA Professional Development Awards and the BA Teaching Qualification for Further Education. Corporate Services staff have also been coached to digitally upskill and build confidence to optimise service provision.

The team are accessible and available to all staff, across all campuses in a range of ways; online, face-to-face, at drop-ins and through organised mentoring and training sessions. The Installation of hybrid learning pods across all three campuses at Forth Valley College supports online, on-campus learning and teaching practice delivery in a noise-controlled, private environment, thus providing the conditions to allow appropriate coaching and synchronous / asynchronous learning pedagogies to be utilised.

The team recently implemented a major Moodle (VLE platform) upgrade, completely overhauling accessibility features to make course content accessible to all learners, and adding new features which simplify course design, customisation, and online assessment for student-facing staff. Staff have also been supported to make their learning accessible to all, through use of appropriate digital technology, including Microsoft 365 and Moodle Brickfield Labs.

The Academy has developed a series of Digital Skills Discovery Tools which enable staff to determine a confidence baseline in use of key technologies, helping them to assess their own digital learning needs and development.

By working with curriculum teams, the academy also helps identify and evaluate units that have the potential for online delivery and offer training to help all staff in planning for, and delivery of, hybrid learning. This includes supporting with the design of online learning content using Rise and Articulate 360.

The Academy provides leadership to fully embed a vibrant culture of creativity in learning and teaching throughout the whole organisation in a digitally reliant landscape, so that staff and students routinely imagine, invent and implement creative approaches to learning. The team provide professional input to planning digital skills development, digital learning and teaching practice, and all digital aspects of a transformational, resilient, and sustainable curriculum.

## Evaluation and Impact

The Academy has helped the College achieve recognition as a Microsoft Showcase School, one of only three Further Education providers in Scotland to do so. This status sees the College join an exclusive global community of institutions that are recognised for educational transformation, and innovation in learning and teaching.

Over the past year the Academy has helped the College reach an unprecedented number of seven staff members become Microsoft Innovative Educator Experts, in recognition for their commitment to developing knowledge and application of Microsoft technologies for innovation in teaching practice.

By driving digital skills development for all College staff, this has enabled an increase in online and blended learning across all modes of delivery, including commercial programmes.



This means that Forth Valley College are now reaching out to students across different regions, sectors and demographics whilst allowing them to have more control over their learning.

### Lessons to take forward

Having appropriate infrastructure, networks, and resources to facilitate digital advancement are the foundations to success. What has been evident in this case study, however, is the need for broad support networks that can inspire, mentor and facilitate the development of staff to take advantage of the infrastructure colleges are investing in. Most importantly however, the case study highlights the importance of co-creating learning material to suit a range of pedagogical approaches, thus increasing the ability to be more agile in meeting the changing needs of learners and stakeholders.

## 6. REFLECTIONS

The case studies presented in this report portray a range of digital initiatives that have had a positive impact on the areas they were brought in to support. Notwithstanding the absence of examples from curriculum areas such as computer sciences and STEM disciplines where there are cutting edge advancements both in industry and academia, the information gathered from the case studies presented offers an insight into the processes centres apply to scope, develop, and implement digital solutions.

What comes through strongly in the case studies is that investment in technology solutions should not precede full consideration of stakeholder needs and desired pedagogical approaches to learning. The case studies presented in this report consistently involve collaboration and co-designing of curriculum with learners in advance of any digital solutions being implemented, even in an evolutionary context. By listening to learner and stakeholder needs, including evaluation of data such as KPI trends, colleges must continue to consider the deployment of internal or standardised systematic processes that allow innovative digital practice to be implemented.

Learners highlight how they value the flexibility of remote delivery including being able to access course materials out with live lessons (Education Scotland, 2021) which shows the opportunity to advance blended learning methodologies that include more asynchronous pedagogical approaches in place of synchronous ones that are often synonymous with blended learning.

Scotland's colleges collectively boast a strong track record in the development of staff through the presence of various collaborative communities of practice as well as an ongoing commitment to provide resources that help develop the skills and literacies of college staff both in terms of digital technologies and approaches to learning and teaching.



As documented in some of the case studies presented in this report, the presence of highly skilled learning technologists in colleges, presents the opportunities for greater innovation in curriculum and MIS systems design. The ability to customise digital solutions using internal staff resource (in the form of learning technologists with software development skills) can lead to rapid and highly customised solutions that optimise resources and lead to stronger outcomes. Whilst collaborative practice across all institutions is something the sector has a strong reputation for, the production of standardised sector wide solutions may not necessarily be in the interests of all colleges owing to differing stakeholder needs, for example the need to integrate any digital solution with existing college ICT systems. In this sense, while sharing examples of best practice between colleges is beneficial for all, there should always remain sufficient scope for bespoke solutions to be implemented to suit the local context at the institutional level.

From a learning and teaching perspective, learning technologists are becoming increasingly utilised in supporting staff and students on their digital journey, leading to many colleges investing in digital learning hubs to support the development of staff and students with generic digital skills and literacies. These spaces are becoming increasingly utilised, helping ensure all staff have access to resources that will help them develop the skills required to deliver learning and teaching, as well as services to support remote learning, a key recommendation of Education Scotland's Remote Learning in Scotland's Colleges report (2021). Furthermore, the instances of faculty specific hubs, such as Edinburgh College's Digital Care Hub, that provide space for staff to engage with discipline-specific peripherals will continue to make significant contributions to the integration of contextualised digital skills and literacies. This will also provide the labour market with a more digitally competent workforce.

In a competitive job market, the acquisition and retention of developers and technologists with the skills required to help colleges digitally advance will continue to be a challenge for the sector.

As seen from some case studies in this report, the ability to partner with software development and tech companies can produce some highly effective solutions, lessening the risk for colleges embarking on innovative digital projects without having all the requisite skills within their workforce. Successfully delivering such collaborative digital projects, will require colleges to have staff with skills of a different sort, such as skills and experience in pursuing funding and managing projects with external stakeholders.

Investment in infrastructure to deliver remotely continues to be a financial challenge for colleges, particularly when digital poverty continues to be an ongoing concern for students. This raises the potential for inequitable access to hardware that supports specialist software, often seen in STEM and Media subject areas.

Against the backdrop of an 8.5% cut in real terms of Scottish Government funding between 2021-22 and 2023-24 (Audit Scotland, 2023) and with rising staff costs, the continual investments in large data centres are an area, like many others, that may come under financial scrutiny, despite it being able to support solutions such as cloud based remote server access for students. In an ever-changing digital world, where cloud computing is becoming the norm, and as some colleges have demonstrated, cloud-based services from organisations such as Amazon (AWS) and Nutanix can mirror this function without the initial high capital associated with data centre upgrades.

Looking to the future, and with a solid base to build on, it is evident that Scotland's colleges will continue to pursue their digital ambitions. In future it is likely that development of colleges' digital services will impact broader areas of student interest such as career counselling and wellbeing support.

In addition, the rapid emergence of Artificial Intelligence has already seen senior representatives from Scotland's colleges conceptualise the idea that bespoke Large Language Models (LLMs) can be created institutionally and at the sector-level to produce databases of information that can be utilised to optimise services for both students and staff in the sector.

Whilst the benefits of Artificial Intelligence are there for all to see, a challenge remains for Scotland's Colleges to ensure the authenticity of student work. By modifying approaches to learning and assessment where the ethical use of LLMs such as ChatGPT can be encouraged, the development of protocols supported by the assistance of technology such as Turnitin's AI detection tool, can uphold the sector's reputation for quality against the threat of AI generated student work. In addition, colleges must be prepared to continually invest in cyber security resilience through strategic investment in infrastructure and the development of staff in this area.

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## Other Resources:

Dementia VR Experience

<https://www.youtube.com/watch?v=9lioMMihJUU>

Making Jewellery in a digital world

<https://www.youtube.com/watch?v=S82M3sDZM4M&t=2s>

Adapting WordPress (WP) for use as an ePortfolio

[https://drive.google.com/file/d/1Cps-FL2Ru0a5Pyobr0wW\\_PH366oX9D9K/view?pli=1](https://drive.google.com/file/d/1Cps-FL2Ru0a5Pyobr0wW_PH366oX9D9K/view?pli=1)



[www.cdn.ac.uk](http://www.cdn.ac.uk)

 College Development Network

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