THE FUTURE OF EDUCATION

The Herald
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CRISIS IN STEM ■ MENTAL HEALTH ■ BREXIT AND ERASMUS ■ TRAINING

ISSUE ONE: FEBRUARY 2021



A reboot for the system

This year of crisis has presented many challenges, but is it also set to inspire a revolution in learning?

JOHN SWINNEY MSP ■ SIR ANTON MUSCATELLI ■ MARK LOGAN ■ KEIR BLOOMER ■ DAVID COLE-HAMILTON



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THE FUTURE OF EDUCATION

contents

Sector brings its 'A' game amid era of disruption

WELCOME to The Future of Education magazine, a 60-page special publication that complements and expands upon the insight provided by The Herald's ongoing campaign – launched last August to create a platform for teachers, government, policymakers and wider civic Scotland to drive the national debate around education.

On the following pages, we shine a light on some of the people, places and organisations currently grappling with the business of learning in Scotland. We talk to the innovators, the academics and those on the teaching frontline – all striving to create a better education system amid the unprecedented disruption of the pandemic.

Certainly, the crisis has greatly accelerated the adoption of 'digital classroom' models of teaching, but it has also revived other pertinent issues, such as the future of exams and growing problems with mental health.

These themes are touched on inside along with how the inevitable economic downturn will affect vital links between industry and further education establishments.

There are also the pressing concerns over what impact Brexit will have upon the international standing of our universities and future intake of foreign students.

As you'll learn inside, these issues present many challenges that are being confronted head-on by Scotland's education sector, which is attempting to bring its 'A' game to the handling of the pandemic.

What's also clear is that many view this as a once-in-a-lifetime opportunity to review the status quo and devise new systems to help raise attainment for all in the future.



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After a year like no other, **Deputy First Minister, John Swinney** sets out the Scottish Government's blueprint for education – a manifesto that will guide its vision and priorities during 2021 and beyond

In pursuit of excellence and equity



THE last year has been a turbulent period for Scotland's education sector as every aspect of our national life has been affected by the COVID crisis. Teaching and non-teaching staff in our schools and early learning and childcare settings are performing extraordinarily under challenging circumstances. They have refocussed their work to support pupils in a range of imaginative, creative, and stimulating ways.

So it is worth taking a step back and looking at where we are, and where we are heading.

Our vision for Scottish education is driven by the pursuit of excellence and equity – all children and young people receiving an excellent broad general education through Scotland's Curriculum, alongside a sharp focus on closing the poverty related attainment gap.

This crisis has put into sharp focus how essential it is to have a curriculum that will provide our young people with knowledge, skills and attributes needed for life in the 21st century. As last year's PISA Global Competence results illustrate, Scotland's pupils are punching above their weight internationally and our education system is putting in place strong foundations for our young people to thrive in a constantly changing world. We must continue to focus on the broad set of skills young people need to compete in the global economy.

Our blueprint for education is the National Improvement Framework and Improvement Plan which guides our vision and priorities. The cornerstone of education recovery this year will be the health and wellbeing of pupils and staff, intensified support for reducing inequity, and enabling the highest quality of learning and teaching.

Our improvement plan has been informed by a report from the International Council of Education Advisers, established in 2016, to advise Ministers on how best to achieve excellence and equity in our education system. They conclude that Scottish education exhibits many strengths and has an excellent standing internationally. It includes 12 recommendations to make the education system more resilient, including a greater role for internal assessment in determining qualifications, and a move to a cyclical review of the curriculum. Scotland is already making progress in many areas such as outdoor and adventure learning, and physical and creative play for young children.

Closing the poverty-related attainment gap is the defining mission of this government and our focus on equity and excellence continues. Our investment in Scottish Attainment Challenge has supported the recruitment of over 900 additional teachers into schools, which will help accelerate recovery and focus on those who need it most.

There is no question that lockdown and being out of school has affected vulnerable children and those in deprived area the hardest, with COVID deepening the attainment gap.

And it's not just numbers – we need to invest in the profession and empower teachers to make lasting change.

So we have introduced Pupil Equity Funding as a new way of working, by providing money directly to the schools, and headteachers that know their young people best. This empowers them to decide where best to make a real difference to the



■ Developing digital skills is a key plank of the Scottish Government's STEM strategy

children in their schools. In May last year, I confirmed that more than £250 million in Pupil Equity Funding will be made available to 97 per cent of head teachers over two years. As well as taking total investment in the Scottish Attainment Challenge to over £750 million over the last five years, this also extends the

> **We must continue to focus on the broad set of skills young people need to compete in the global economy**

programme for a further year beyond this Parliamentary term and provides invaluable long-term commitment. While the attainment gap is narrowing in many areas, it is clear that empowered teachers are being creative and flexible to improve young people's lives.

We have been learning a lot as we navigate our way through the pandemic. I know I certainly have, and I have had to make hard, and sometimes, unpopular decisions. Cancelling this year's National 5, Higher and Advanced Higher exams was not taken lightly. My overriding priority has been to ensure the health and wellbeing of our children, young people and staff, and to maintain teaching and learning wherever possible.

I appreciate only too well the additional burden home learning is placing on many of our children and their families. That is why, in January 2021, we published an Equity Audit that aids our understanding of the impact on children's learning and health and wellbeing, particularly disadvantaged pupils. It provides important learning on specific areas such as digital infrastructure and evidence for us to target our mitigations effectively during this current period of remote learning.

Throughout the pandemic, we have continued our work to ensure the continuous improvement and reform of the curriculum and we have been privileged to benefit from the insights of Mark Logan, COO of Skyscanner, and his recommendations on how to develop our approach to computer science in school education. Mark's recommendations align with and further develop a number of activities we are taking forward as part of the STEM strategy, and officials are working closely with Mark to take forward change in all the areas he has highlighted, in the most coherent and prompt way.

Our young people will get the best chance to grow their digital skills effectively, to pursue their personal ambitions in an ever more digital economy of the future.

Since the period of school building closures last spring, we have significantly enhanced the national e-learning offer by growing the provision for live remote learning, recorded lessons, and supported learning. The expanded offer includes e-Sgoil, which provides a range of programmes covering curriculum topics from 3 to 18, including 27 courses for National 5, Higher and Advanced Higher. It includes a bank of 500 recorded lessons and 14,000 items of supported online learning and teaching materials, including resources for teachers to use in planning and delivery.

It is clear to me that digital exclusion is a barrier to learning. Many families do not, and cannot afford, a device to learn on. We have taken action to ensure that disadvantaged children and young people have access to the devices and connectivity that are needed to engage in education. The £25m that was provided in the summer will deliver well over 70,000 devices for learners across Scotland. To date, over 63,000 devices have been distributed and connectivity has been provided to more than 11,000 learners.

I have also commissioned the Organisation for Economic Co-operation and Development to undertake an independent review of Scotland's Curriculum for Excellence to help us better understand how the curriculum is being designed and implemented in schools and to identify areas for improvement across the country. This work has been expanded to analyse the future of assessment and qualification approaches in the Senior Phase curriculum in Scotland. This work is underway and will provide us with options on how to enhance our approach, informed by international good practice.

I will continue to take decisive action in the best interests of children and young people, teachers, and staff. We all have a responsibility to deliver the education that our children need in these most difficult of times. ■



The positive lessons to be learned from a crisis in the classrooms

Empty chairs and empty tables may well be the theme for another miserable year for school pupils . . . but can we actually benefit from the challenges presented by the pandemic and embrace a revolution in modern learning?

By **Andrew Collier**

THE COVID-19 pandemic has forced Scottish education into its biggest crisis in decades. Schools have closed, exams have been cancelled and blended learning has by necessity been introduced at a rapid pace that would previously have been unthinkable.

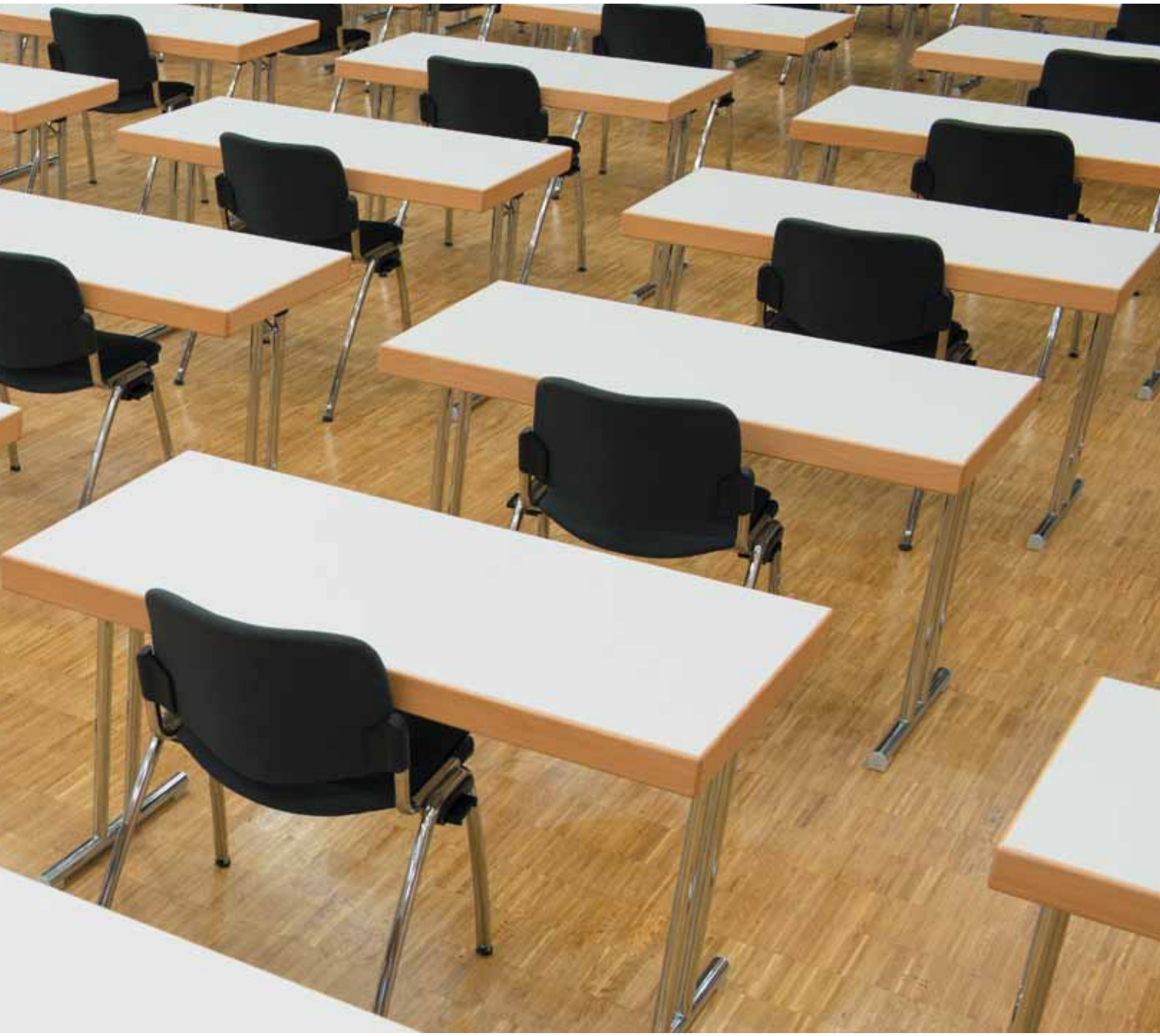
Faced with these unprecedented circumstances, the system has held up well, though there have been well documented problems along the way. A strong suspicion exists, for instance, that teachers may never want to hear the word 'algorithm' ever again.

It may also be a while before we return to normality. For the second year running, there will be no national exams in the summer. Instead, there will be an assessment of pupils conducted by individual schools.

Procedures fell into near chaos last year when a proposed system using the use of a Scottish Qualifications Authority algorithm was scrapped by education minister John Swinney within days, following protests, and replaced by teacher estimates.

"The result was that the pass rate immediately shot up," says the veteran Scottish educationalist Keir Bloomer, who now works as a consultant and is considered the architect of Scotland's current school curriculum.

"We know that standards were not maintained. It was far, far easier to get a National or Higher qualification in Scotland in 2020 than in any other year. So we



already have a problem there."

Dr Bloomer believes that many of the same difficulties could emerge this year, though he is somewhat sanguine about it. "In fairness, I don't think it's the end of the world if for a couple of years people get passes that most people are entitled to have but a minority may not be.

"After all, this is an extraordinary emergency and it would be surprising if a few things didn't go wrong. I also think that universities and colleges are well versed in the system and know perfectly well that lower standards currently prevail. What I think will be very difficult is getting those standards back to anything comparable with what they were before.

"I think if I were a young person sitting my Highers in 2022 and narrowly failing but knowing perfectly well that if I had sat them in 2020 or 2021, I would have passed, I would be a little displeased to say the least.

"Persuading students that the pass rate has to be reduced from next year, assuming this crisis is over by then, is not going to be straightforward."

He thinks it is possible that the pass threshold may be tapered downwards gradually over two or three years rather than create a cliff edge.

"We also have a knock on problem in that people with inflated qualifications from last year or this will have embarked or will embark on courses to which they are not suited. That's not just a waste of resources in universities, but also something of a tragedy for them."

Persuading students the pass rate has to be reduced from next year, assuming this crisis is over, is not going to be straightforward

The sheer scale of the disruption over the last 12 months means that there will be a significant challenge in getting schools ready for a return to eventual normality. "It's going to be very difficult, and I don't see the signs I would like >>

to see of government preparedness for a catchup."

One option, Dr Bloomer thinks, might be for young people to repeat a year. "In many cases, that would be sensible, although I suspect they wouldn't welcome that," he says.

"Other things that could be done include slightly extending the school day or year, running summer schools, or making free tutoring available. First of all, we would have to carry out assessments of the learning gaps of individuals, though I don't see any great signs of that happening either."



■ Keir Bloomer raises significant questions.

It seems almost inevitable that the current crisis will provoke a discussion about whether a traditional examination-based assessment process is fit for purpose in the 21st century.

This, of course, is a perennial argument but it may be that the changes that have been demanded by the pandemic have brought it to a head.

Dr Bloomer sees what he describes as an "unthinking" movement developing that exams should now be scrapped altogether. As a means of assessment, he adds, the exam system does have failings but it has significant advantages too.

"It cannot ask about every aspect of an extended course, and some types of skills are easier to assess in this way than others. There is a certain emphasis on memory, for example, rather than creative thinking and that is a shortcoming.

"However, there are benefits as well. The most important of these is that it's a form of assessment that is not open to external help.

"The assessments of course work, project work and home assignments are very open to that kind of interference.

"The well supported child from a family with good educational standards



A move to a new learning model

REAL efforts will be made this year to ensure that the assessment process replacing traditional exams is fair to students, according to a leading Scottish educationalist.

Professor Louise Hayward, who holds the chair of Educational Assessment and Innovation at Glasgow University, is also a member of the internationally renowned Assessment Reform Group.

"Teachers will assess the work of young people in classrooms and that will then be moderated by other teachers within the same school, by other groups within an authority and also by the Scottish Qualifications Authority (SQA) to make sure that there is a sense of fairness across the country."

One advantage of the traditional exam system, Professor Hayward argues, is that everyone does the same thing on the same day in the same amount of time.



■ Moving away from examinations is being actively considered.

"However, the disadvantage of an examination is that it can only ever give you information about limited aspects of the curriculum. It's constrained in terms of time.

"Classroom-based assessment can give you evidence of peoples' work that is closer to the curriculum, which is what everything stems from and what matters. It means that teachers can gather information from a wider range of courses that allows them to get a close match with that curriculum."

She believes that the change in education we have seen during the pandemic means it is a good time to discuss the future of the examination system.

"This is happening internationally now.

"There is recognition that while our existing systems may have served us well in the past, the young people of the future are going to have to be prepared for a world that is a lot more complex.

"The curriculum therefore has to change in order to support them in the skills that they will need. That means that the qualification systems have to be designed in ways that support these different approaches to learning.

"It's about a broader discussion than that whether it should be about examinations or teacher assessment. It really is about how we design a qualification system that will encourage our young people to become the kinds of future citizens that our societies want and need." ■



■ The pandemic has led to questions being asked about the virtue of having regular examinations for school pupils.

and its own rich cultural capital will always come out better in terms of these types of assessment. One huge virtue of examinations is that they are fair and that helps less advantaged groups to make progress."

This ethos, he points out, is embodied in the Scottish iconography of the lad o' pairts (or in these more enlightened times, the lass o'pairts, too, as the examination system is by its nature not gender-prejudiced).

"There are also various ethnic minority groups that do very well in examinations. A lot of people at the moment are inclined to cast them aside without thinking about why they are actually beneficial.

"I'm not opposed to seeing if we can improve the examination component of assessment or if more things ought to be included in the total mix, but I'm strongly opposed to the idea that exams as a whole should simply be rejected."

More widely, Dr Bloomer believes the education system to be highly conservative. Because of this he appears somewhat sceptical about whether the blended learning process enforced on schools by the pandemic and involving online as well as classroom-based learning will be allowed to develop when we return to normal times.

"We have been in an admittedly involuntary enormous educational experiment that would not have been undertaken in any other circumstances. It would be a tremendous waste if we didn't learn some lessons from it."

He talks of teaching as being a human resource. Traditional learning generally involves putting a teacher in front of every class, compromising their ability to do anything else.

As classroom-based teaching has effectively disappeared during periods of the pandemic, so teachers have been able to spend more time doing things like developing resources, setting assignments, providing feedback, talking in small groups and giving feedback - in fact, many of the same kind of tasks undertaken by their university and college counterparts.

"I think that's a much more sophisticated use of the overall resource in many ways.

"Our way of conducting learning in the future might be somewhat more flexible, varied and creative than it has been in the past."

Nevertheless, Dr Bloomer adds, there are advantages to the classroom approach. "Face-to-face instruction with a group of people is actually fundamental to learning in many ways.

"But it's not the only way. We shouldn't be putting all of our eggs in one basket. It's very important to find out what has been done well during the current emergency and to see how we can make some use of that in the future."

He continues: "As far as the pandemic is concerned, I hope we will learn some lessons and adjust practice in constructive ways.

"But do I think that in itself it will have a long term adverse effect on Scottish education? No I don't.

"Young people, and particularly those going through the later stages of secondary education at the moment, have had a dreadful experience.

"They will require a lot of support to get them back to where they ought to have been.

"I don't underestimate the consequences for those individuals but it's a temporary setback. I think that the system as a whole can recover fairly quickly once the emergency is over." ■

Building a robust system for accreditation

ELEMENTS of the Scottish education system need to work together to create a learning process that does not award examinations preferential status over other forms of assessment, according to a leading policy group.

Douglas Hutchison is Vice-President of the Association of Directors of Education in Scotland (ADES), an independent professional network for leaders and managers in education and children's services. "The whole system needs to work collectively to rebuild a way to accredit learning that doesn't privilege exams over every other form of assessment," he says.

"The issues highlighted by the pandemic are less about the immediate impact of cancellation and more about the inherent weaknesses of a high stakes exam system," adds Mr Hutchison, who is also Depute Chief Executive at South Ayrshire Council.

"The roots of the system's failure can be found in earlier decisions such as removing unit assessments. Our collective obsession with exams as the only objective measure of a young person's learning have taken us to this point. We need to build a robust system for the accreditation of learning where learners can evidence their progress in multiple ways, not just what they can remember in a final exam."

Step towards a new system of appraisal

Now is the time to grasp the opportunity to review the emphasis on 'one-stop' final exams, writes **David Hicks, Headteacher, Fairview International School**





Fairview International School is located in scenic Bridge of Allan

FOR educators, the challenge of trying to forecast the future requirements is one that is ever present in our minds. Education is indeed focussed on the creation of futures through personal development in skills and knowledge.

While the past year has undoubtedly presented challenges too extensive to address individually within this scope, the only constant is that the future will continue to present uncertainty for some time to come.

Educators have spoken of 21st Century skills and the four Cs for some time now: critical thinking, creativity, communication and collaboration. Indeed, recent times have shown the importance of each of these skills. However, we have also been shown the need for care, compassion, resilience and adaptability.

As an International Baccalaureate (IB) school in the heart of Scotland, our focus is upon the holistic growth of each student in our care. An IB education is underpinned by ten key attributes: the IB Learner Profile.

Attributes such as caring, open-mindedness, being balanced and being reflective feature as significantly as other more academic traits. Indeed, in a 2020 interview with TES, the IB Director General, Dr Siva Kumari, stated that "education cannot carry on as before, but must become more skills orientated rather than solely knowledge based".



Fairview International School places a focus on continuous assessment for pupils

This clear message sets a tone and direction for the future at a time like never before.

Students of today have access to a wealth of information at their fingertips, and are already more skilled in navigating the technological landscape than many of their parents and in some cases their teachers.

In the current challenging climate of remote online learning this has possibly tested the parents and teachers as much as the students!

Discerning this information, understanding its value and using it appropriately with thought and consideration is of greater importance in these days than the traditional regurgitation of learned information. Which leads us to possibly the most radical opportunity available to us all at this time.

With examination sessions cancelled for the second successive year, we are presented with an opportunity to revisit the way students are assessed. The case has long been made for a change to the current system. Ground-breaking assessments such as those pioneered within the IB Middle Years Programme might become the norm, providing rich multimedia stimuli, opportunities for dynamic modelling and much more; assessing how students interpret, apply and connect knowledge presented in various formats.

Thus providing an assessment scenario much more similar to life and the workplace than traditional pen and paper. Equally, a revived focus upon continuous assessment is a step in the right direction.

We must grasp the opportunity to review the traditional emphasis upon a one-stop final examination, not only in light of the significant impact of recently cancelled exams, but equally because, in most respects, it does not reflect life beyond school and university in our modern, ever-changing and currently uncertain world. I urge those with the power to do so to grasp this opportunity for change.

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By instilling a 'can do' attitude in youngsters who wish to bring their business ideas to fruition, Young Enterprise Scotland (YES) aims to inspire a new generation of entrepreneurs



A bright future awaits pupils who pitch ideas

WHEN asked what drives him, Geoff Leask, the CEO of Young Enterprise Scotland for the past six years, is unequivocal: "Making a difference to the lives of young people".

Over the past year that has meant supporting 311 students gain the first SCQF Level 6 enterprise qualification, launching a new financial learning platform, extending its college-based Bridge 2 Business programme, establishing new business and charitable partnerships, and enhancing its digital capabilities. Despite the pandemic, YES has lived up to its name and "walks the walk" of enterprise.

"There has never been a more important time nor a greater need to nurture and develop entrepreneurial talent within our economy," Geoff says.

"At a time when young people will be disproportionally impacted by the effects of the global pandemic, our team stepped up and worked with a collaborative and creative mindset that has seen us adapt and thrive. We are now well-placed to help all schools and colleges achieve key learning outcomes in 2021 and beyond."

Geoff first got involved in Young Enterprise Scotland as a volunteer in 1999 and likes to illustrate the power of enterprise learning through the stories of the young people he has met, from the 11-year-old who sells t-shirts printed with his colourful drawings to the young entrepreneurs who set up businesses as part of a YES programme in school.



■ Geoff Leask, CEO of Young Enterprise Scotland.

"In 2013, one of the first recipients of a Bridge 2 Business £50 grant was a joinery student. His idea was to make Christmas decorations from wood off-cuts left after the college workshops.

"We didn't hear from him for weeks, but then he appeared not only to repay the £50, but also with a £90 profit to donate to the local hospice. In that time, his fellow students had backed out of the idea, the wood was too wet and had to be dried before it could be worked, and he got his pricing wrong. But he turned it around, selling all his stock.

"Here was a guy who had never sat a desk, but in a matter of weeks had learned about HR, operations and communications. It was very impressive."

Equipping young people with the



■ Young Enterprise Scotland's Festival of Youth Enterprise, held at Hampden Park before the pandemic, encourages the concept of enterprise learning and presents an opportunity to challenge young people in a different way



■ Bill McDonald, Chair, Young Enterprise Scotland

entrepreneurial skills of resilience, adaptability, and communication, to mention just three, underpins all the YES programmes from primary school onwards. As importantly, at a time when schools are striving to balance health concerns and teaching priorities, these programmes support aspirations to create new productive learning environments that are aligned to individual education requirements and capability.

"The pace of change that young people are going to live through is one reason why enterprise education is so critical," Geoff continues.

"Making sure that young people are equipped and have the skills to help them through is essential. The organisations that I see that have not just survived but thrived in this current situation are those where entrepreneurial leadership is at the core. I don't just mean the individual at the helm, but something that is interwoven, like the blood that flows through the organisation.

"Enterprise learning presents an opportunity to challenge young people in a different way – there's no one-size fits all in education and I think teachers recognise that.

"So, as we contemplate the very structure of schooling – divided by age and tested through exams – perhaps it is time to introduce new methods and new measurement?"

Taking up the debate, YES Chairman Bill McDonald, added, "The recovery of the economy post pandemic will be driven in part by the elevation of enterprise to spark the creation of new businesses. As well as driving diversity in our economy, supporting enterprise will accelerate employment recovery as these businesses grow."

"The role of enterprise needs wider recognition. Young people, whether they complete formal education or not, need multiple routes to success and with the right enterprising mindset, they will have many more opportunities.

"For some that might mean the next Unicorn business but for most, it is about giving them the tools to set up or be in a business that can employ others and provide for them and their family."

Bill, an experienced non-executive director across the technology and academic sectors, sees YES as creating the "golden thread of enterprise" through the education system and beyond.

"We're beginning to see the progression from the YES Circular Economy Challenge in primaries, to our Company Programme in secondary schools and our B2B programme in colleges.

The next step is to see that golden thread woven through entrepreneurial organisations beyond the education system, such as Elevator or Converge, so that at whatever stage a young person steps out of education, be that at 16 or later, collectively we can continue to provide support they need to develop their entrepreneurial journey."

> The pace of change that young people are going to live through is one reason why enterprise education is so critical

This week, it is likely that you'll find Geoff Leask at the charity's Rouken Glen Training Centre, actively supporting its Pathways programme for those with additional learning needs.

Keeping connected with young people is what Geoff sees as the differentiating factor at YES, and as the Scottish Government continues to nurture enterprise, it is using its knowledge and understanding to help establish the infrastructure that will bring enterprise learning to fruition for all young people, whatever their background. ■

yes.org.uk



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Scotland

Computing science is of vital importance to future careers and the national economy . . . so how do we put the magic into a subject often seen as too boring?

We need to get with the programme



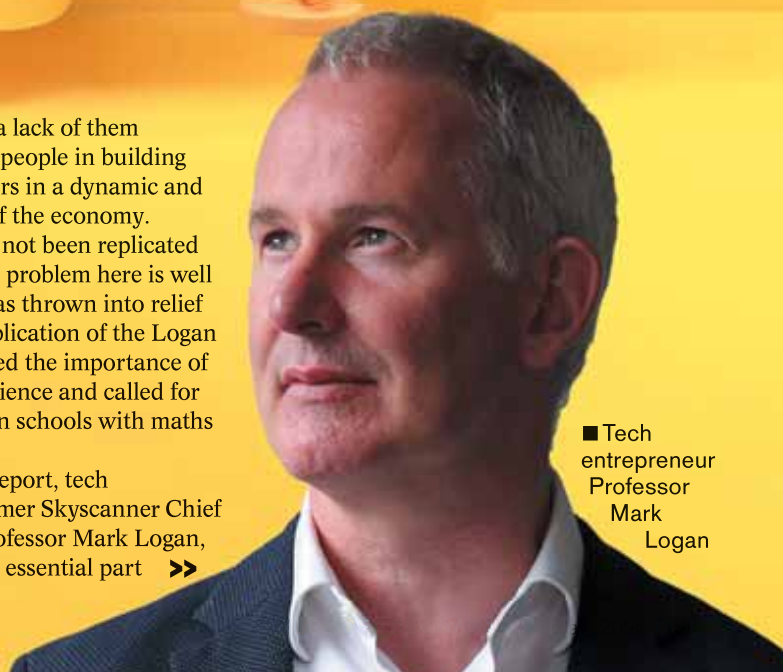
By **Andrew Collier**

IT WOULD be unfair to say the teaching of computing science in Scottish schools is at the edge of catastrophe but it certainly doesn't have its problems to seek. Teaching numbers in the subject have fallen by about 20 per cent in a decade, student rolls have also been dropping, and with the cohort of females studying the subject down to just 16 per cent there is a profound feeling things need to change.

It's clear computing isn't being treated like the core curriculum subject it needs to be. Digital skills have never been more important and a lack of them disadvantages young people in building lucrative future careers in a dynamic and ever-growing sector of the economy.

Our mistakes have not been replicated by other nations. The problem here is well documented but it was thrown into relief last year with the publication of the Logan Review, which stressed the importance of teaching computer science and called for it to be put on a par in schools with maths and physics.

The author of the report, tech entrepreneur and former Skyscanner Chief Operating Officer Professor Mark Logan, sees the subject as an essential part >>



■ Tech entrepreneur Professor Mark Logan



■ Making computing science more attractive to school pupils is a mission Scotland must accept

<< of the Scottish educational system. "Computing science is a magical subject," he says. "Anything that allows you to sit down, build almost anything and bring it to life has to be magical. But we have to ask ourselves what we are doing that removes the magic. The kids don't feel that's what they want to be doing."

He admits the falling numbers and lack of gender diversity in the subject cause him worry. "It doesn't necessarily feel like a crisis today, but it's a crisis tomorrow. That gender statistic, with 84 per cent of Higher candidates being male, is tantamount to saying that our society somehow conspires to remove half of our most appropriate candidates from the process. We're not just denying them the opportunity to pursue pretty well paid and fulfilling careers. We're also removing half of our best people from the talent pool. A country with a population size as small as ours can ill afford to do that."

Professor Logan concedes part of the issue may be the computing science syllabus is "a bit boring" and many teachers are not particularly comfortable programming computers.

"It's therefore difficult to create a syllabus in that context and teach students. It also has a lot of stuff in it and the time available to create interesting projects is pretty limited, so the programming part of the course gets somewhat squeezed."

He believes an answer to this may be to remove other parts of the syllabus to make more space for programming projects.

"I'd put some daylight in there so teachers can engage in more intensive projects and the students finish the course being pretty strong programmers.

"That may or may not be a controversial view, but I'm convinced it's at the heart of the issue."

He compares the situation in Scotland with that in eastern Europe, where there is a great emphasis on student programming and that means universities can start at a higher level.

> **We have to support our teachers in updating their skills and keeping up with the fast rate of advance**

He also references another problem often referred to by educationalists: the supply issue of getting people with computing science degrees away from lucrative jobs in industry and into teaching, which may well be seen as less appealing.

"Computing jobs in industry tend to be well paid. Of course, teachers coming into the profession are smart and dedicated, but they're usually coming with degrees where programming isn't a major component.

"There's then a challenge in terms of how strong they are at programming computers and that limits what the syllabus can explore. I think we need to put something in place that teachers can participate in that allows them to continuously upskill.

"By doing that, they will be able to stay relevant and up to date with the technology. Things don't move very quickly in physics and chemistry but in computing they do. We have to support our teachers in updating their programming skills and keeping up with the very fast rate of advance."

Professor Logan shares the view of others in the sector that closer links should be forged between industry and the classroom, with business executives helping in the learning process, a move that could benefit teachers and students.

"I think we need a teacher-led programme that very efficiently distributes the best practice teaching methods – and there are examples of this all over Scotland with things like projects and extracurricular clubs – so all teachers can benefit from work done somewhere else.

"We have give them identity and recognise that they have a very difficult subject that's changing all the time and give them a more direct voice. I'm

confident the Scottish Government and Education Scotland are very open to exploring all these avenues."

Scotland's ability to create world-class tech start-up businesses, Professor Logan points out, is in large part dependent on the supply of young people who are well equipped to work in industrial environments. For this reason, educational courses are hugely important to industry performance. "There is an increasing awareness of that and a lot of good initiatives are being undertaken between businesses and schools and universities. The question is whether we can do better."

He sees a disconnection within higher education. "We produce really strong tech graduates but they tend to be pretty limited in their understanding of anything to do with start-ups and how to form and grow a company. I think we would see a greater rate of start-up creation in Scotland and more equipped graduates going into them if they have an option at university to become almost entrepreneurial tech graduates. The institutions have a variable response to that."

He also sees business school students and tech graduates as being too separate from each other at higher education institutions, staying in silos when they could be sharing ideas and knowledge.

"If we could collide them in a more intensive fashion and perhaps bring in biotech and design students, there would be great opportunities to create a market square. We don't embrace that opportunity because it's too difficult to organise, so we prefer to keep skills apart."

Nevertheless, he says he remains optimistic about the possibilities for the future when it comes to bringing cohesion to the tech sector and education. "I honestly don't think these are hard problems to solve.

"I've believed for a long time big problems can require small solutions. What's required here is the will and collaboration between agencies, which sometimes in Scotland we're not as good at as we could be. But I think we're off to a great start." ■

View the report at **gov.scot/publications/scottish-technology-ecosystem-review**



■ Cabinet Secretary for Finance Kate Forbes and Professor Logan at CodeBase

Digital technology key to enhanced learning

ScotlandIS believes the right mix of technology experts and educationalists will promote collaboration right across the country

ONE of Scotland's main digital industry bodies believes digital technology usage pioneered during the current COVID-19 pandemic could enable a transformative new approach to schooling. The membership and management organisation, ScotlandIS, sees this as providing an opportunity to create a broader learning experience for students.

"It could be used to bring teachers, speakers and industry people from anywhere in the world into classrooms," explains Jane Morrison-Ross, the organisation's outgoing CEO. "No matter where you are, from Stornoway to Stranraer, it would mean we could provide a superior quality of access for young people to some of the most inspirational lecturers.

"It would also help Scottish teachers, who are doing a huge amount of work and who I think have responded brilliantly over the past few months in really challenging circumstances during the pandemic."

Teachers themselves are on a number of ScotlandIS working groups and make a useful contribution to discussions.

"Learning should be as fun and interactive now as computer games.

"We think there are huge opportunities to collaborate across Scotland.

"The important thing is to get the right mix of the education experts and the technology ones. We can make some of the processes easier and bring innovation to the way we teach."

This approach, Ms Morrison-Ross believes, can help drive equality of access across the country.

"That's whether you're in one of the outlying islands or an inner-city area. The really key thing for us is that there is no distinction between children living in poverty and those in well-funded schools."



■ Jane Morrison-Ross, the ScotlandIS organisation's outgoing chief executive

The relationship between education and the digital sector is a good one, she adds. "There has been a huge groundswell of support from our members and the industry. They want to contribute to the future of education in Scotland.

"Everyone recognises it's of fundamental importance."

Equipping employees with the abilities required by businesses has been a learning experience for City of Glasgow College in the Covid-19 era, but one that has allowed them to futureproof their training provisions



Flexible skills

FURTHER education is critical to Scotland's social and economic future. Businesses need access to high-quality employees if they are to prosper, and the country's college network is a primary source of training in the necessary skills.

Educators and company leaders need to work closely together and this mutually beneficial dependence is nurtured by initiatives such as the Scottish Government's Flexible Workforce Development Fund.

City of Glasgow College is one of the primary institutions delivering training under this initiative. Its teaching has changed dramatically in response to the Coronavirus pandemic, with more than 500 courses delivered remoted to over 4,000 delegates since April.

Government ministers reacted quickly to the virus – overall the fund increased from £10 million to £20m for 2020/21. The college also had to adapt quickly to a new and very different learning environment.

"We're delighted that we have been able to continue to support business through this pandemic," says Carla Gethin, City of Glasgow College's Director, Business and International Partnerships.

"This fund recognises that the college sector is crucial and it means we can play our full part in the education and skills recovery after Covid.

"We've always had great flexibility with our employers. Of course we were facing a challenge, but our college already had provision to meet their skills needs.

"We had to get that provision ready for delivery on an online platform, but we were able to respond swiftly."

While the college's ethos of working closely with employers and delivering on their needs is well embedded, staff still faced significant challenges in adapting to the issues resulting from Covid-19.

"Until this virus came along 99 per cent of our course delivery happened on a face-to-face basis," explains Douglas Thomson, the college's Flexible Workforce Development Fund Manager.

"Most of it was done directly in a room, so we had to switch away from that. The core subjects may not have changed, but the emphasis has shifted. We've all become much more familiar with online conferencing than we were before."

How did they make the rapid change in course delivery the pandemic necessitated?

"Basically, we cancelled everything from mid-March through April and used those six weeks to look at what we were going to do.

"We realised we were going to have to move online and our lecturers formed a team to optimise our model for this new type of learning, and we continue to refine our model. It's been a challenge, but our people have been fantastic."

One advantage of the fund, Thomson says, is that it has allowed employers to move beyond the courses which they are legally required to offer their staff into other areas of training that are important, but often don't get pursued. "It has allowed them to go to longstanding areas of training need and address issues such as productivity. That's a very positive change."

Now into its fourth year, the fund has been opened up to SME employers for the



■ Carla Gethin, the college's Director, Business and International Partnerships



■ City of Glasgow College offers an extensive range of courses alongside a huge amount of invaluable guidance and expertise.

fit the future

first time. Allowing companies based in Scotland with 250 or fewer employees to access up to £5,000 to cover training, it's designed to allow SMEs address skills gaps in their workforce.

"This can help small and medium businesses become more productive, as well as develop and enhance business flexibility, improve staff wellbeing and resilience," explained Thomson. "It can help them get through and recover from Covid-related disruptions."

The college can help every step of the way. From general advice to helping put together a skills gap analysis and customised training plan, SME employers will get the assistance they need to help them access the fund and create a programme of bespoke training designed to help them upskill their workforce. The sheer scale of the college – it is one of the largest in Europe, designed to accommodate up to 40,000 students – means it is able to offer an extensive range of courses alongside a huge amount of invaluable guidance and expertise.

The programmes on offer to businesses include a broad range in the area of interpersonal management skills. Examples include development training for staff promoted to supervisor or manager level.

"We also do quite a lot of culture change coaching and mentoring for organisations, as well as communications training," says Thomson.



■ Flexible Workforce Development Fund Manager, Douglas Thomson

"Then there's office, health and safety and technical skills as well as specialist learning in things like accident investigation training. No two courses are the same. "We work with business, the creative industries, local authorities and the third sector. They all have different motivations and needs and the training reflects that – we work with them all to find exactly what they want to get out of it.

"We're also adding new courses such as accountability and responsibility, and train the virtual trainer. And an area we are also working on is expanding our trainer pool for mental health first aid training, which is a big focus for clients just now."

One distinct advantage City of Glasgow College enjoyed in moving to online learning is that it already had experience in delivering courses remotely through its highly successful international programme.

Its global learning portfolio currently includes providing learning in hospital and elderly care in Malaysia; English in Indonesia; hospitality, digital design and professional cookery in India; mechanical and electrical engineering in Vietnam; and bakery in Malta. "We have some 110 partnerships around the world with 30 different countries," says Carla.

> The fund has allowed employers to go to long-standing areas of training need and address issues

"That brings back a lot of value to Glasgow and to Scotland. Reskilling and upskilling is going to be required the world over – that's particularly true because of Covid. We've engaged with governments around the world.

"We're leading the way both in Glasgow and globally. It is an exceptionally competitive field, but we're involved in a lot of different projects ranging from maritime to dementia care."

Thomson believes that a benefit of the forced disruption this past year is that it has deepened links between the college and business. "I think that will continue and expand. No-one saw Covid coming, but we have responded well and I think there are positives to take from that."■

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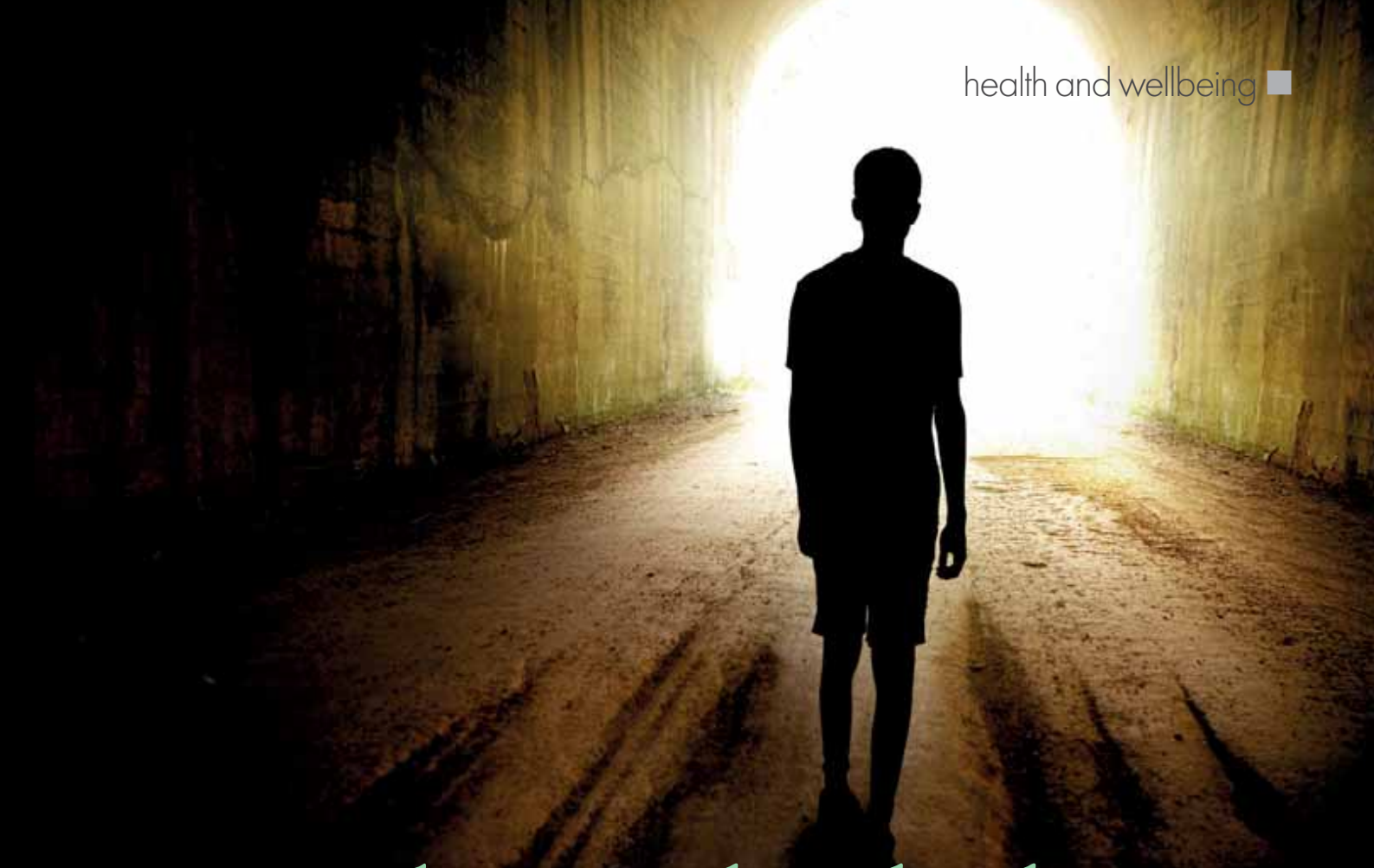
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Seeking the light in the darkest days

With lockdown after lockdown it's hard to see any light at the end of the tunnel and those most affected are Scotland's young people. So what more can be done to protect their mental health and wellbeing?

By **Ann Fotheringham**

EVEN before COVID-19 turned our world upside down in 2020 Scotland was facing a mental health crisis. Scottish Government research published in April 2019 found "cause for concern", with data indicating a decline in the mental wellbeing of adolescents, particularly among teenage girls.

As far back as 2005, a report by the Office for National Statistics on behalf of the Department of Health and the then Scottish Executive concluded three children in every classroom will have experienced mental health problems by the time they are 16.

The coronavirus pandemic has put mental health across all generations into sharp focus.

For young people in particular, the closure of schools has been devastating, with children losing out on access to their friends, trusted adults and crucial support services.

There is a growing body of evidence that suggests COVID-19 has had a significant impact on the mental health and wellbeing of Scotland's children and young people. Research by Mental Health Foundation Scotland found that four in 10 of those aged 18 to 24 experienced loneliness during the pandemic – more than any other age group surveyed.

Research by the Scottish Youth Parliament, YouthLink Scotland and Young Scot showed that almost two thirds (61 percent) of children and young people aged 11-25 were "moderately or extremely concerned" about the impact of coronavirus on their future, and a survey from Young Minds found 80 percent of young people with an existing mental health problem felt it had worsened during the first weeks of the pandemic.

The annual, long-running Prince's Trust survey of young people's happiness and confidence returned the worst findings in its 12-year history for 2020.

More than a quarter (26 per cent) said they feel unable to cope with life since the start of the pandemic.

"The pandemic has taken a devastating toll on young people's mental health and wellbeing," said Jonathan Townsend, >>



Olivia Meiklejohn, Duncanrig Mental Health Ambassador

Sharing our personal experiences is vital

A secondary school in East Kilbride has put the pupils themselves at the heart of its mission to promote and protect mental health

AMID a raft of creative mental health initiatives led by pupils at an East Kilbride secondary school, one has proved particularly powerful. Drop-in sessions for teachers at Duncanrig, during which young people gave presentations about their own experiences, inspired the school to change the way it delivers information about students to staff.

Depute head teacher Martin McCabe explains: "When the young people spoke about their own, lived experiences you could have heard a pin drop in the room.

"They followed up the presentations with question-and-answer sessions and it had a huge impact on staff. It really helped us to revamp the way we communicate information about pupils to the staff."

Duncanrig Secondary has 14 mental health ambassadors from a range of year groups, and S6 pupils can take an elective mental health and wellbeing course.

During normal times pupils also run weekly support sessions for more vulnerable pupils, providing them with a safe place to spend lunch time and focusing on different aspects of positive wellbeing. Working with a range of partners, such as SAMH, Women's Aid, Take Five and Revolve, they have created several wellbeing initiatives, including SWISH clothing charity for families who are struggling financially.

Supporting their peers and younger pupils throughout lockdown has been a huge challenge, explains S6 pupil and Duncanrig Mental Health Ambassador Olivia Meiklejohn.

"We share information from mental health groups, and we have been learning about coping strategies, and hope to share them with the rest of the students," she says. "Our idea is to encourage people to contact us through our forums page – some students find it easier to write a message about how they feel and, especially during this time, the internet is one of the few ways we can help.

"We have also been posting our own Serotonin Videos – just short, funny clips we hope will make people smile."

It is important, says Olivia, that mental health initiatives in school continue to be pupil-led where possible.

"Our experience of school will be different from the teachers, and younger pupils will listen more to someone closer to their own age," she says. ■



« the trust's UK chief executive. "Many believe they are missing out on being young and sadly we know that the impact of the pandemic on their employment prospects and overall wellbeing could continue far into their futures."

In October 2020 the Scottish Government published the Mental Health Transition and Recovery Plan, outlining its response to the mental health impacts of COVID-19. It lays out key areas of mental health need that have arisen as a result of the pandemic and lockdown, and the Scottish Government's plans to respond – some of which had already begun before last March.

The Scottish Government has also announced new support for school staff as part of a £1.5 million funding package to help manage additional pressures as a direct result of the pandemic.

The package includes training by Barnardo's Scotland and mental health charity Place2Be, and new professional learning opportunities for post-probation teachers offered by Education Scotland and the General Teaching Council for Scotland, who will also develop a new coaching and mentoring offer for teachers who need it most.

Joanne Aitken, Children and Young People Development Manager at SAMH, says there needs to be "radical change" within the mental health system. She said: "We know it's been a really tough time for young people this past year. Even before the coronavirus pandemic, services for children and young people were under strain. In the months following the first lockdown there was a worrying decrease in the number of young people being referred to CAMHS.

> **We cannot underestimate the effects of lockdown on mental health . . . they are real and are serious**

"Additionally, young people have faced disrupted education and recent research from YoungScot, Scottish Youth Parliament and Youthlink found that many are describing a reduction in motivation as a result of the changing educational structure, as well as reporting a general decline in their mental health and wellbeing."

Ms Aitken added: "We welcome the Scottish Government's recent commitment to develop new mental health training for all



school staff by summer 2021, to equip them with the tools to have good conversations around mental health, but we need radical change within our mental health system to ensure that specialist services are available for those who need them and no young person is left behind."

Alan Taylor is headteacher at St Benedict's High School in Linwood, Renfrewshire.

"We are in the midst of the most difficult time we have ever experienced in education," he said. "Closing schools affected everyone and we cannot underestimate the effects of lockdown on mental health. They are real and serious."

Mr Taylor adds: "Through the first lockdown, sadly, we saw what that disruption of normal life brought – feelings of anxiety, stress, worry, fear for the future, loneliness and isolation.

"Some young people switched off from working, unable to focus or motivate themselves and some parents reported concerning behaviours at home – their children had become angry, jumpy, hyper-vigilant. Many were worried about the SQA exams and what the cancellation would mean for their academic futures."

There were positives, he explains, with some pupils using the time effectively, both to study more and to become more independent in their learning and thinking.

"It allowed them to develop a variety of different skills in different areas, both academic and non-academic. Fortunately, we were able to have our vulnerable pupils at school where they could receive appropriate face to face support from staff and outside agencies."

When pupils returned to school in August, teaching staff at St Benedict's noted a marked 'bounce back.'



"As soon as they were back in the building, into a routine and seeing their friends, they were incredibly positive and really enjoyed being back at school. Even with the new restraints, such as mask-wearing, hand sanitising and so on, they demonstrated a great deal of >>

Teachers' mental health and wellbeing should not be forgotten

THERE is growing concern about the effects of the pandemic on the mental health of teachers. Public criticism, on top of the demands of remote learning, balancing home life and working in designated hubs for vulnerable and key workers' children, have made the situation difficult for many.

A Renfrewshire primary schoolteacher, who wished to remain anonymous, said she felt "increased anxiety" about catching the virus on top of coping with workload and managing her own children's home learning.

"There has been a lot of bashing of teachers from the public, the press and some parent groups," she said. "It is frustrating to continually hear this misconception teachers are lazy, when most of us are working even more hours than normal. It's exhausting."



Her colleague, who also chose not to reveal her name, added: "It's been a rollercoaster. Every day when in school, I worry about the close contact I have with the children (inevitable and unavoidable in Primary 1). It affects every weekend and holiday, too, as I constantly worry about catching it and taking it home to my family. Although myself and my family follow the rules, I hear on a daily basis from children whose families are not, increasing the risk to everyone."

She added: "I'd like to hear a strong message from government that schools are open and teachers are working very hard to support all their pupils. When it is felt safe for children to return to in-class teaching it should be on a blended basis with adequate staffing levels to meet the needs of those in class and those learning from home.

"Smaller class sizes will be needed in any case to allow for children to receive the teacher input that will be required to address the gaps in learning. I know from my own experience that the children in my class are experiencing very different levels of parental support (from very little to very good) and at P1 stage they are completely dependent on this to allow them to engage in remote learning."



resilience, of positivity for the future.

"That made me feel optimistic and talking to parents backed that up. These young people quickly moved on, they adapted. The second lockdown has set us back and there is a long road ahead – but that response gave me hope the negative effects of this may not be long-term."

> **These young people quickly moved on. . . that response gave me hope the negative effects may not be long-term**

The Renfrewshire Council transition programme, developed in partnership with the Educational Psychology Service, has also had a huge impact, says Mr Taylor.

"Build Back Better was implemented by all schools and helped pupils, staff and parents to recognise and acknowledge the impact of lockdown and the different types of mental health experiences people had had," he explains. "It also provided guidance and support – a 'route map' for recovery – focussing on welcoming pupils back, coping with change, making them feel better about themselves, connecting with their feelings and moving forward. It was delivered by highly trained pastoral staff through PSE lessons, and I am confident these strategies have helped and will continue to help."

The pandemic has accelerated the use of technology in education, with everyone – from pupils and teachers to parents now involved in their children's learning at home to a much greater degree than before – having to adapt to and learn a variety of online platforms. Mr Taylor says upskilling teachers and ensuring equity of ICT hardware accessibility have been part of the challenge. "It is an extremely difficult situation and teachers have done an excellent job. We are in a much better position than when we went into the first lockdown – we also provided online supports for our pupils and parents and ensured a consistent approach across the platforms."

He believes a renewed focus on building resilience in young people could be a positive effect of COVID-19 and lockdown. "The pandemic has brought mental health to the fore. But perceptions were already changing. Nursery and primary pupils are taught to be aware of and express how they feel. There are platforms in the curriculum to talk about mental health for older pupils.

"There is an SQA award for mental health and wellbeing and counsellors play a significant role in school. Pupils are aware of who they can ask for help and crucially, they are comfortable in doing this. Peer educators, like mental health ambassadors, are helping to remove the stigma surrounding mental health.

"Lockdown has been a test of what we have done so far, and pupils' recovery from the experience will determine where we need to go. The pandemic has demanded effective working across support agencies, and this will definitely continue to develop.

"We cannot stop bad things happening, but when they do, we can prepare young people and strengthen their response to help to them to protect their own mental health," he said. "I believe pupils will bounce back after this second lockdown and, for those who do not, we will be there to provide the support they need." ■





■ SCSC is urging the government to increase investment

Call for a national crusade

A COALITION of independent and third sector young people's service providers is calling for a "national crusade" to tackle the mental health pandemic. Campaign group the Scottish Children's Services Coalition (SCSC) is urging "greatly increased" investment in services amid concerns over a lost generation of vulnerable children.

Lynn Bell, CEO of LOVE Learning, a member of the Scottish Children's Services Coalition, says COVID-19 has had a "devastating impact" on young people's mental health and wellbeing.

"Our children are remarkably resilient, but the statistics on the mental health of our young people create a compelling case for a national crusade to address what is a mental health pandemic representing one of the greatest public health challenges of our time," she said.

SCSC believes the new lockdown and a return to home schooling means even more children, many of whom would not have accessed children's mental health services under normal circumstances, will now need support. It is calling for a renewed focus on prevention and early intervention. This includes on-demand counselling services in GP surgeries and greater community support generally, reducing the need for referral to under-pressure specialist CAMHS.

Lynn Bell added: "Unless the government takes urgent action to improve access to services, this young generation will be destined for a future of mental ill health, with a resultant societal impact.

"There must be significantly increased investment in and greater collaboration between the public, private and third sectors to deliver adequate mental health support. We must also use this as an opportunity to radically transform our mental health services, for now and the future, refocusing on prevention and early intervention.

"This crisis is one we can address, but it will require a similar energy, drive and commitment to that demonstrated for COVID-19 if we are to achieve this and prevent this generation of young people giving up on their futures – and themselves." ■



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Following the tech sector's urgent calls for schools to treat computing science as a core subject, efforts are now underway to tackle the STEM gender disparity and also foster mutually beneficial links between classrooms and leading technology firms, writes **Andrew Collier**

Diversity in tech will equal a better future



YOUNG people across Scotland are set to benefit from a £75,000 fund to help them learn innovative digital skills and prepare for the jobs and careers of the future.

Grants of up to £5,000 will be available from Digital Xtra Fund, a charity backed by blue chip organisations such as Baillie Gifford and Amazon Web Services, which aims to boost interest in computing and technology in those aged 16 and under through extracurricular activities.

The initiative is particularly aiming to interest female students in the sector and to help address some of the challenges teaching computing and IT.

Last year's Logan Review into the Scottish technology sector concluded that computing science should be treated as a core school subject in the same way as physics and mathematics.

Kraig Brown, Digital Xtra Fund's Partnerships and Development Manager, says he is hugely pleased to announce the next round of grant awards, the Fund's sixth round overall.

"The funding is on a par with the last two years, but I'm delighted with that considering everything that's happened in the past 12 months," he adds.

"Each year, we receive more and more applications showing there's a growing interest for engaging young people in tech through extracurricular activities. The flexibility of these types of activities is ideal for targeting young people from various backgrounds or locations. For example, offering activities in rural areas or attracting female participants often requires something a little different. Extracurricular activities are perfect for this.

"That being said, delivering activities outwith schools over the past year has been extremely difficult. All our 2020 grant recipients had to adapt. However, because of the lockdowns, I hope the tools and knowledge to connect with young people, whatever the situation, are now commonplace when perhaps they weren't before. Just to be safe, we are adding a requirement for this year that all projects must show they can deliver remotely from the outset or that they can pivot if needed. Obviously, that's very much on the radar just now."

The deadline for applications is April, with the evaluation process taking place in May and supported initiatives beginning in the new school academic year in August. One new element this year will be the inclusion of at least two grants focused on cyber security skills funded by the Scottish Government under their cyber resilience strategy. The aim of these grants is to get young people online safely and make them aware of some of the dangers while also providing them with some of the skills they need if they are to follow a pathway in cyber security.

There is a hope that the latest funding round will also bring a particular accent on early years education. "There's a recognition of the importance of this, and the evidence has shown that it's both possible and effective"

Another powerful focus will be on building stronger links between industry and education. Kraig explains: "We've been very fortunate in building some brilliant relationships. We have CGI, Amazon Web Services (AWS), JP Morgan and Baillie Gifford as some of our top contributors. These are all brilliant companies that have been very successful and employ a lot of people in Scotland.



■ Kraig Brown, Digital Xtra Fund's Partnerships and Development Manager

"One of the things they are keen to do as well as providing funding is to improve employee engagement with the projects. I'm a huge fan of this.

"A recent report by LinkedIn showed that across the UK, the top three emerging jobs are artificial intelligence specialist, data protection officer and robotics engineer. Also in the top 10 were data scientists, cloud engineers and cyber security specialists.

"A young person will likely know that all these are careers in tech, but they probably won't be able to tell you what they entail. That is where engagement with industry is hugely, hugely valuable. It can provide the details and context of these sorts of careers



■ Work is underway on tackling pupils' lack of awareness of the varied STEM careers available in Scotland

far better than by simply learning technical skills. And it's not just us saying this: the Scottish Government and other public bodies such as SDS and DYW are too."

Part of the current problem, Kraig says, is that while these types of careers are highly desired by employers, a lack of understanding about what they actually entail makes them unappealing to young people.

"However, if you can get someone in to talk to them who works in, say, the field of artificial intelligence, and if they can relate to the student and what they are learning, then that type of job suddenly is a lot more interesting and exciting.

"Young people also don't realise that these jobs are here in Scotland. But if they can gain an understanding of these jobs directly from those who are actually doing them, seeing themselves in a tech career becomes a lot more realistic – and that's especially true of girls and young women."

He admits there are issues in bringing industry and educators together in this way. "Schools don't necessarily know how to get in touch with businesses in their areas and it can be intimidating to call them out of the blue.

> Young people seeing themselves in a tech career becomes a lot more realistic – and that's especially true of girls and young women

"Likewise, it can be difficult to get people from industry involved, especially at peak times. And it can be challenging, for example, to explain AI to a group of 12-year-olds. We need to give industry guidance on how to do that."

The two sides need to be introduced to each other – "matchmaking", as he puts it. "That's definitely something that as a charity, we are looking to do more of. I'd love to bring our industry partners and grant recipients together. At the moment I make introductions, but I'd like to take it to the next level."

There has been particular enthusiasm for this concept from the IT services firm CGI, he adds. "They are saying they want their staff to be involved and to do more with the resources they have. JP Morgan are also really interested in this." This year's grant awards will be dedicated to Joan Davidson, the Head of Learning at Edinburgh Science, who passed away last year.

Kraig says: "As I got to know Joan, her passion for STEM education really inspired me – she was my mentor and made the festival's touring programme in schools very special. You only had to see the children's faces to see that. Joan was a wonderful person whose work reached more than half a million young people. She really was amazing." ■

www.cgi.com/uk/en-gb

Time to mark achievement in Scotland's education sector

After a year that has forced educators to adapt like never before, The Herald Higher Education Awards will return in 2021 with some innovations of their own, writes **Lyndsay Wilson**, The Herald's Events Director





■ Guests at The Herald Higher Education Awards 2019

FOR the last five years, The Herald Higher Education Awards have championed the best of Scotland's colleges and universities.

This event was established in 2015 to recognise the role Scottish higher education plays in changing lives and driving the nation's economy.

Scotland is home to more world-class universities and colleges per head of population than almost anywhere else in the world, and that's been evident in the depth and calibre of participants in the awards. In just five years, we have received almost 600 applications and recognised 231 finalists.

The Herald has a longstanding and proud relationship with Scotland's educational establishments, and the awards recognise major achievements in a sector which is vital to the country's growth.

Notable recipients of the lifetime achievement award have included Maggie Kinloch, Professor Emerita and former Deputy Principal of the Royal Conservatoire of Scotland; Mhairi Harrington OBE, the former Principal and Chief Executive of West Lothian College; and Dr Ilona Roth, a previous senior lecturer at The Open University.

Another eagerly contested category is the Higher Education Institution of the Year, which has been dominated down the years by The University of Glasgow, taking that honour three times.

The University of Strathclyde and University of Dundee have each been crowned once.

As the Covid-19 pandemic took hold, these awards were paused in 2020. But having witnessed the adaptability, innovation and resilience of Scotland's educators over the last 12 months, we are delighted that this event will return.

Of course, things will be a little different this time around.

With the wellbeing of our nominees, partners and guests foremost in our minds, the 2021 Herald Higher Education Awards will take place online. The ceremony will be full of all the entertainment, interactive networking and of course awards that attendees have become accustomed to.

But the virtual setting means more colleagues than ever before will be able to come together to celebrate the efforts of all finalists and winners.

The awards will open for entries this March, with judging taking place in May and the evening celebration being held on Thursday, June 17.

We are inviting the education sector to save the date, and more details will be shared across The Herald and heraldscotland.com in the coming weeks.

> The awards will open for entries in March, with judging taking place in May and the evening celebration in June

The Herald HIGHER EDUCATION AWARDS 2021

To learn more about criteria and the event's previous winners, simply visit **newsquestscotlandevents.com/heawards** where you can also see the full list of 16 categories.

They span from how institutions develop innovative materials and methods in their teaching and research to how they market themselves, use technology, engage with employers, support students and promote widening access policies.

We are delighted to be working with City of Glasgow College and Jisc on this year's event.

Jason Miles-Campbell, Head of Jisc Scotland and Jisc Northern Ireland, says: "Jisc is proud to sponsor The Herald Higher Education Award for Innovative Use of Technology for a number of years.

"Now, perhaps more than ever, we recognise the pace of innovation within institutions in Scotland as we collaborate with our members to explore new uses of technology to rethink student delivery, learning and research."

If you'd like to join them in partnering with the awards, or have questions about applying, feel free to contact me directly at ***lyndsay.wilson@localiq.co.uk***. ■

The Herald
HIGHER EDUCATION AWARDS 2021

SAVE THE DATE

LAUNCH:	JUDGING:	VIRTUAL EVENT:
Wednesday, March 24	**Thursday, May 13**	**Thursday, June 17**

For information on partnership opportunities or to register interest in entering, please contact Kirsty Loughlin, Senior Events Manager for further details.

T: 0141 302 6016 / E: kirsty.loughlin@localiq.co.uk

The number of female pupils who click with computing is set to rise thanks to the efforts of an award-winning Scottish charity who take coding direct to the classroom

Today's lesson is: *everyone* can hack computing



SCOTLAND has a burgeoning tech industry but the numbers of pupils studying computing science has plummeted in the last two decades.

Girls, particularly, are failing to take up the subject and the lack of diversity as well as the potential dearth of homegrown talent has become a serious concern.

"It's frustrating because although we have an incredible industry here right now the talent has got to come up from the schools or it is not going to come from Scotland," said Toni Scullion who has founded the dressCode charity to encourage more girls to take up the subject.

"We need to inspire them from school age, and we need to join industry and education more closely together."

That is what she is attempting to achieve with dressCode which has grown from a small computing club she started ten years ago into an award-winning free online portal which is now used by 49 schools in Scotland, eight in England and even schools in Spain and Kazakhstan.

Its impressive reach and popularity has garnered Scullion, a computing science teacher in West Lothian, a slew of awards which has helped dressCode become even more well known.

For Scullion the best reward is seeing the talent that is being fostered.

"It's amazing and the engagement from the kids is fantastic," she said. "Even if it is just ten more girls picking the subject, it is ten we didn't have before although I would like it to be 10,000."

The dressCode clubs are girls only but the charity has begun to allow boys to enter the regular competitions as well as girls because the general uptake of computer science is now so poor in Scotland.

At the turn of this century around 20,000 pupils were studying the subject at secondary but this has dropped to barely 10,000, with the proportion of girls remaining more or less static at around 20 per cent.

"That is startling and really scary," said Scullion. "It's something we need to address because it is not changing fast enough which is really worrying. Something massive has shifted to knock 10,000 people off the total yet they are vital for the future and really are needed."

She believes a number of factors have contributed to the drop, including a lack of computing science teachers at secondary schools in Scotland. Never particularly high, there has been a 23 per cent drop in the number in recent years. The subject is not available in every school and even when it is taught it is not always by a specialist and not enough time is allocated to it, according to Scullion. She points out there are likely to be even fewer teachers in the future if the drop in pupils studying the subject is not addressed quickly.

One of the other problems is that although she is constantly trawling the internet for videos that would inspire the pupils, they are all American, despite the number of tech companies now operating in Scotland.

"They watch them and say, 'that's great but I am never going to America and I am never going to work at Google'," said



■ dressCode has grown from a small club to a nationally-recognised, award-winning charity



> The drop in girls studying computing is something we need to address. It is not changing fast enough

Scullion. "We are missing the promotion of opportunities that exist here which is quite annoying because we have that industry, but I don't think we make a big enough deal of it to the kids.

"One of the things I am trying to do is raise awareness of the many opportunities there are, and I would love to see videos of Scots living here who work at these companies so the kids can see there is a pathway to a good job. The lack of pupils studying the subject is not an easy problem to solve but if we don't do anything it is not going to change. If we just talk about it for ages that is not going to impact the kids in S1 now and that is another whole cohort gone. We need to move faster. I don't think it is impossible, but it is hard and we all need to work together."

Scullion believes every school needs to offer computing science as a subject so the pupils can at least try it.

"Kids don't even get it and that is not fair," she said.

Her dream would be a computing science teacher in every secondary and an itinerant computing specialist to teach computing at primary level. Clubs are also needed in every school so children can experiment, work in groups and have fun outwith the restrictions of the curriculum.

While dressCode was set up specifically to encourage girls, Scullion argues it remains the case that if more pupils take up the subject the number of girls will automatically increase even if it remains lower than the number of boys.

"We don't have enough diversity but we also do not have enough kids coming through and if we don't do something at school level we are not going to have a talent pool so you won't have Scottish kids coming up through the system, creating their own companies, investing back in Scotland and creating revenue," she said.

"If we don't have that we are going to have to pull talent from other countries and that is a shame because computing science is a great subject and computing is integral to every single industry, so we need to solve this problem. Other subjects are important but right now computing is failing.

"We have the talent in Scotland, we have the energy and the industry and the global brands, but we just need to pull it together," said Scullion. ■

dresscode.org.uk

Charity ensures schools get with the program to inspire girls

TONI Scullion distinctly remembers fiddling around on her first computer and accidentally changing the background by altering a line of code.

It was a lightbulb moment that changed her life, instilling a love of computing she has carried through school, college, university and back into the classroom as an award-winning teacher and founder of the charity dressCode which aims to inspire girls to study computing science.



Teaching has only increased her desire for her pupils to experience the "magical" feeling she felt when she changed that line of code and which she still feels now when she is working with computers.

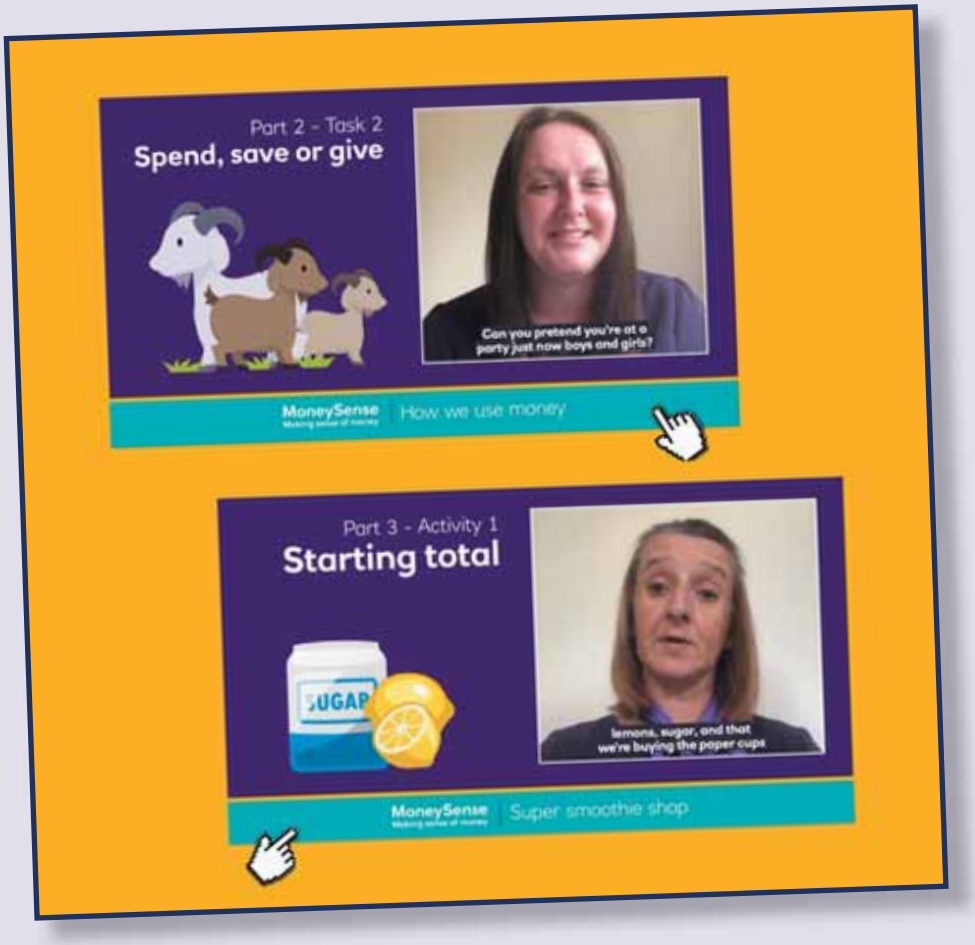
"I want to spread it to every girl and I want them to at least have the opportunity to try computing science because right now not all the girls or boys are getting the opportunity and that is a huge problem," she said.

The realisation that there was a massive gender gap as well as a decrease in the number of pupils studying computing science motivated her to start the girls only club which became dressCode.

Now a charity, dressCode is a free online portal available to all secondary schools and aimed at pupils aged 11-13 with resources and ideas to introduce them to game design, web development and cyber security.

"The kids can choose their own topic and that's where they get really excited," said Scullion. "What they do isn't being dictated to them – they are doing something that really inspires them."

Royal Bank of Scotland has adapted its successful MoneySense classroom workshop for the homeschooling era



Lessons are right on the money ...

THE impact of the last 12 months can't be underestimated – especially for parents who have had to adapt to homeschooling as well as homeworking.

With this in mind, Royal Bank of Scotland has adapted one of its biggest teaching programmes to a homeschooling audience. MoneySense lessons for social media and online.

For anyone unfamiliar with the programme, MoneySense is a classroom workshop designed for primary and secondary schoolchildren aged five to 18 to teach the fundamentals of financial capability. Developed with Scottish schoolteachers, bank managers and trained community bankers have been hosting the classes with schools across the country for the last three years – but this came to a dramatic halt following lockdown.

So, through volunteering and the teams who helped develop the bank's PlayStation game, Island Saver, the workshops have now been adapted for online, are interactive and are hosted by virtual teaching assistants.

Importantly, they are no longer open to just schools – parents and children can now use them too. Each workshop now includes a virtual volunteer video which can be played in class allowing pupils to continue to receive top-tips, expertise and knowledge from a volunteer while they complete the workshop activities.



Sian Chudleigh, a Royal Bank of Scotland Community Banker

To support group discussion within the classroom, the pre-recorded video is split into sections so that teachers can pause and restart the lesson when it suits them.

Sian Chudleigh, a Community Banker who took part in the filming of the digital workshops, said "I think it's great idea that we are still going to be able to support MoneySense workshops at this difficult time and interacting with classes digitally is a great way to do this.

"MoneySense is one of the most important parts of my job as a Community Banker. It is so important that we support children with financial education and prepare them to manage their money as they grow up, and to be able to have bank employees in their classroom to bring a workshop to life is a fantastic way to engage the children in the workshop."

As Glasgow begins its preparation for hosting COP26, so too has MoneySense content. Royal Bank of Scotland is a partner at the summit, and has just launched a new series of MoneySense classes focusing on climate has been created for eight to 12-year-olds.

> "It's so important that we support children with financial education and prepare them to manage their money as they grow up

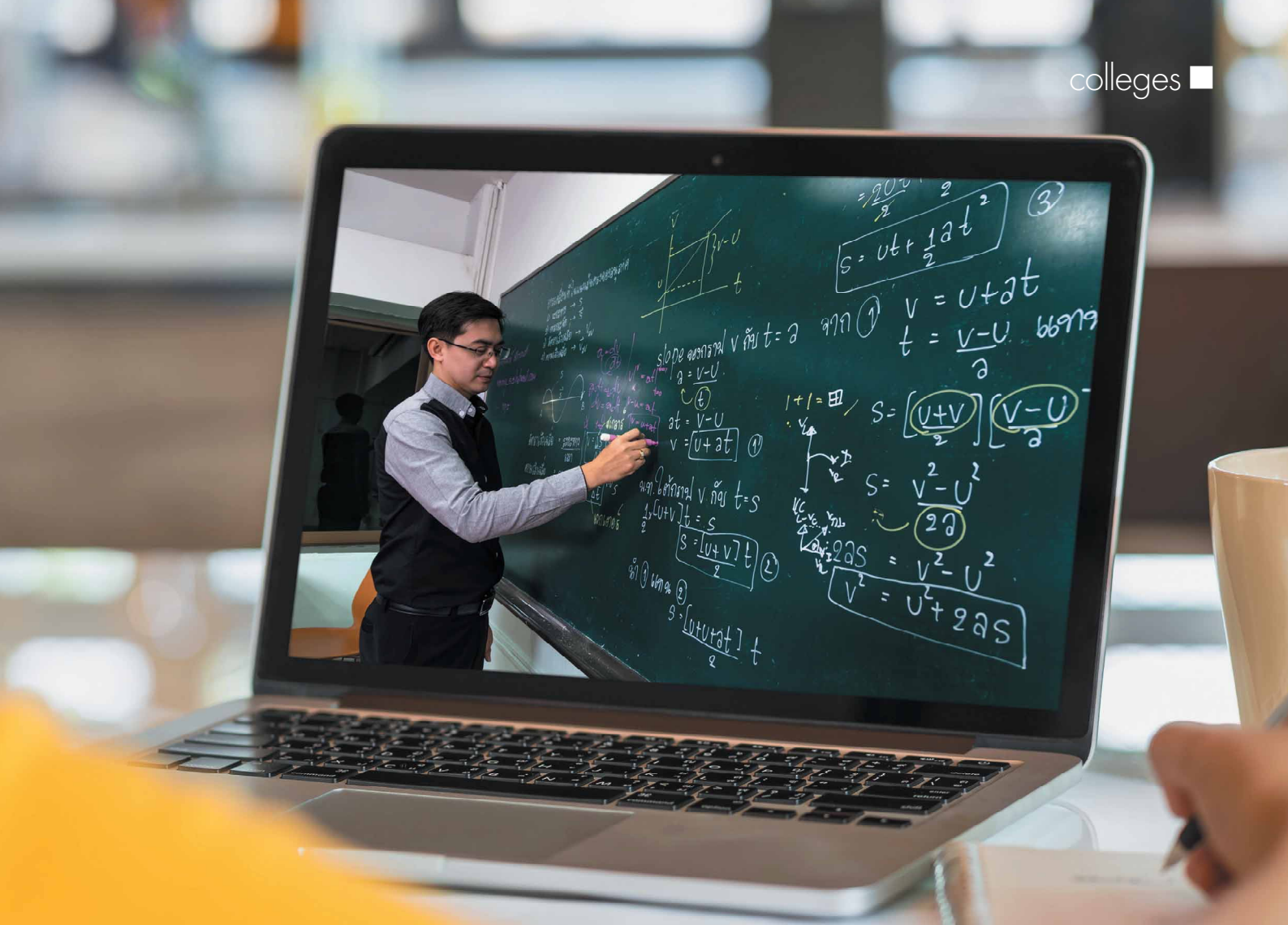
Called Save our Pennies, Save our Planet, the series of classes explores the topic from a money-saving angle, with pupils tasked to think about everyday activities that use a lot of energy, the role they play in climate change and how to reduce energy costs for a household.

Sian, who is helping deliver the activities, said: "The last 12 months have seen families and children spend more time at home than ever before and it has made children more aware of their home environment too.

"We are hopeful that lessons like this will help children – and even their parents – realise that small differences can make a big difference.

"If we can help make the small steps seem fun for an eight-year-old then think about the positive impact it can make in the world in which they will live as an adult." ■

mymoneysense.com



New landscape sparks new solutions

Agile as ever, colleges across Scotland have rapidly embraced virtual learning in preparing their students for a world of work which is set to take on a very different hue

By **Agnes Stevenson**

THE first lockdown of the COVID-19 pandemic proved to be a very sharp learning curve for Scotland's 26 college's 260,000 students and 14,000 staff.

In the space of only days the process began of moving learning online, tackling the issues surrounding the delivery of practical subjects and uncovering the depth of the digital divide that was leaving some students adrift.

Scotland's colleges are located from Shetland to the Borders and out to the Western Isles. They deliver education up to degree level for students in rural settings and urban environments and they have a vital role to play in ensuring that the current cohort of students continues to thrive, despite the obstacles now in its path.

It is not just learning itself that has been disrupted. The events of the past year have shaken the economy to its core, undermining industries and speeding up the rate of change that technology was already having on the workforce.

So now those same students who have had to switch to remote learning may also have lost the part-time employment that sustained their studies or alternatively they may have found their apprenticeships furloughed, and all of them are now facing a future where the work landscape is very different to the one they envisaged when they first enrolled.

None of this has come as a surprise to Audrey Cumberford, principal of Edinburgh College and co-author along with Paul Little of City of Glasgow College, of the Cumberford-Little Report, published in February 2020, which identified major challenges on the >>



■ The Sighthill campus of Edinburgh College before the pandemic led to lockdown

<< horizon. "The signs were obvious at the time that something could happen," says Cumberford, who believed at the time of writing the report that major change to business and education was almost inevitable.

Her predictions have proved to be correct yet, while being realistic about the size of the challenge ahead, she is also confident that colleges have a vital role to play in turning disaster into opportunity.

Having transformed themselves in the wake of the 2008 economic crash into agile operators, closely engaged with the needs of their local economies, with strong business links and adept at delivering education and training that lead to employment, there is room to grow their potential, especially in relation to SMEs. Here, through targeted education and training, opportunities exist to grow this sector.

Speed of response will be essential, if the current cohort are to benefit, but the signs are positive that colleges can change rapidly when the need arises.

"I was astonished at how quickly the majority of staff and students adapted to the new situation and, in fact, it has been a process of co-delivery, with the students helping lecturers and others in their peer group to get to grips with the technology."

This, says Cumberford, points to high levels of resilience and adaptability among colleges and students, and in a future where change, retraining and up-skilling are set to become the reality of the workplace, it is through colleges essential skills and knowledge are going to be delivered.

Already Edinburgh College is working with the city's banking sector, creating bespoke courses to provide financial staff with technical skills.

Meanwhile, other new courses, created since the start of the pandemic, have been developed alongside employers to give graduates in unrelated disciplines the tools to work in a variety of different sectors, some with the promise of employment at the end.

This alignment with business and industry is only set to increase.

"The big tech organisations are going to get more involved in education and it is going to be less about qualifications and more about micro credentials, delivered through bespoke courses, with business and colleges working in partnership."

Technology, says Cumberford, is also set to improve opportunities for flexible and distance learning and is already making some over-subscribed courses more accessible.

"With our Sound Production curriculum, we are limited on how many students we can admit because of space within the technical studios, but since lockdown the staff have been delivering the course online and they tell me this gives them the capacity to train more students at the same time."

All of this activity is aimed at ensuring young people do not pay the price for the pandemic and instead emerge from the crisis equipped with the skills and confidence to forge ahead.

Support from the Scottish Government has taken the shape of the Young Person's Guarantee, a £60million pledge, backed



by major employers, that guarantees every 16-24-year-old access to a job, training, apprenticeship, education, or volunteering, while payments in the 'Adopt an Apprentice' scheme, where employers are funded to take on apprentices who have lost their places within industry, have been raised from £2000 to £5000.

It is through colleges that much of this funding will be accessed and according to Andy Witty, Director of Sector Policy with Colleges Scotland, there is a huge role for the tertiary education sector to play in ensuring the future of students. They will also have a role in supporting Scotland in its post-Brexit recovery through the continuing education of its existing cohort and the retraining of the wider workforce.

> **It was recognised that work experience and an introduction to the workplace was essential to develop essential skills**

"There will be opportunities in the digital, automation and green economy sectors.

"Health and social care will grow, too, and the Scottish Government has announced a significant increase in early years provision, which will mean an increase in training."

All 26 of Scotland's colleges, adds Witty, have strong links to their local business communities, ensuring the training and education they provide is relevant not just for current demands but also for the future. And this, he says, is key to keeping training relevant and helping students to make the most of the available opportunities.

Work on helping college students to develop the skills needed to forge ahead with their careers is already being carried out by Young Enterprise Scotland (YES).

Its Bridge2Business programme encourages an entrepreneurial approach to work through building closer connections with employers.

Geoff Leask, Director of YES, says: "Research showed a lack of confidence among young people and it was recognised that work experience and an introduction to the workplace was essential in order for them to develop essential skills."

As part of its programme, Bridge2Business recruits young people from the business world to mentor students and demonstrates that entrepreneurship isn't just an essential skill for anyone keen to set up their own business, but also has a place in larger organisations too.

The programme also provides micro-funding to allow students to try out their ideas and, along with Foundation Apprenticeships that deliver Higher-equivalent qualifications, this helps to give young people a way of navigating the path from school, through college and training.

It also opens their eyes and nurtures their ambitions to what sort of roles they could pursue in the workplace, even one where the pandemic has changed the landscape and created a world where education looks set to be a career-long process. ■



■ Geoff Leask and YES have been promoting entrepreneurship

How to build a fitter business in the face of a pandemic

DURING the short spell last year when movement around the country was permitted, fitness trainer Lucy Thomson delivered her regular 6am session to clients over Zoom from a beach in the North West. It was, she says, the moment when she realised how rapidly her business had transformed to a virtual model as a result of the pandemic.

The 22 year old from Troon, better known to her clients as Coach Lucy, was already in the process of investing in her online presence before COVID-19 struck, so she was better placed than many small businesses not just to weather the storm but also to benefit from those opportunities for growth it has created. Her business acumen, says Lucy, was fostered at Ayrshire College's Kilmarnock Campus, where alongside her HNC and HND studies in Fitness, Health and Exercise, she gained practical experience in the community and had to prepare business plans.



"I moved from there to the University of the West of Scotland to complete my degree, but it was the real life experience I gained at college that gave me the confidence to start working for myself."

Last year Lucy won a 'Local Hero' award from Bridge2Business, the Youth Enterprise Scotland programme that offers college students opportunities to engage with entrepreneurial role models and offer small grants to allow business ideas to be tested.

Lucy says: "I love what I do so it's great to be able to share my experiences of setting up a business, embracing entrepreneurship and about marketing through social media."

A holistic approach to

Thanks to their early adoption of innovative teaching tools, some Scottish schools were already well prepared for the digital revolution, writes **Nan Spowart**

THE value of using digital tools to access learning has been brought to the fore due to the current pandemic, but in certain parts of Scotland the advantages had already been understood and innovative programmes were already being adopted.

Global tech company CGI has been rolling out devices which have proved invaluable in delivering continuity of learning during this time.

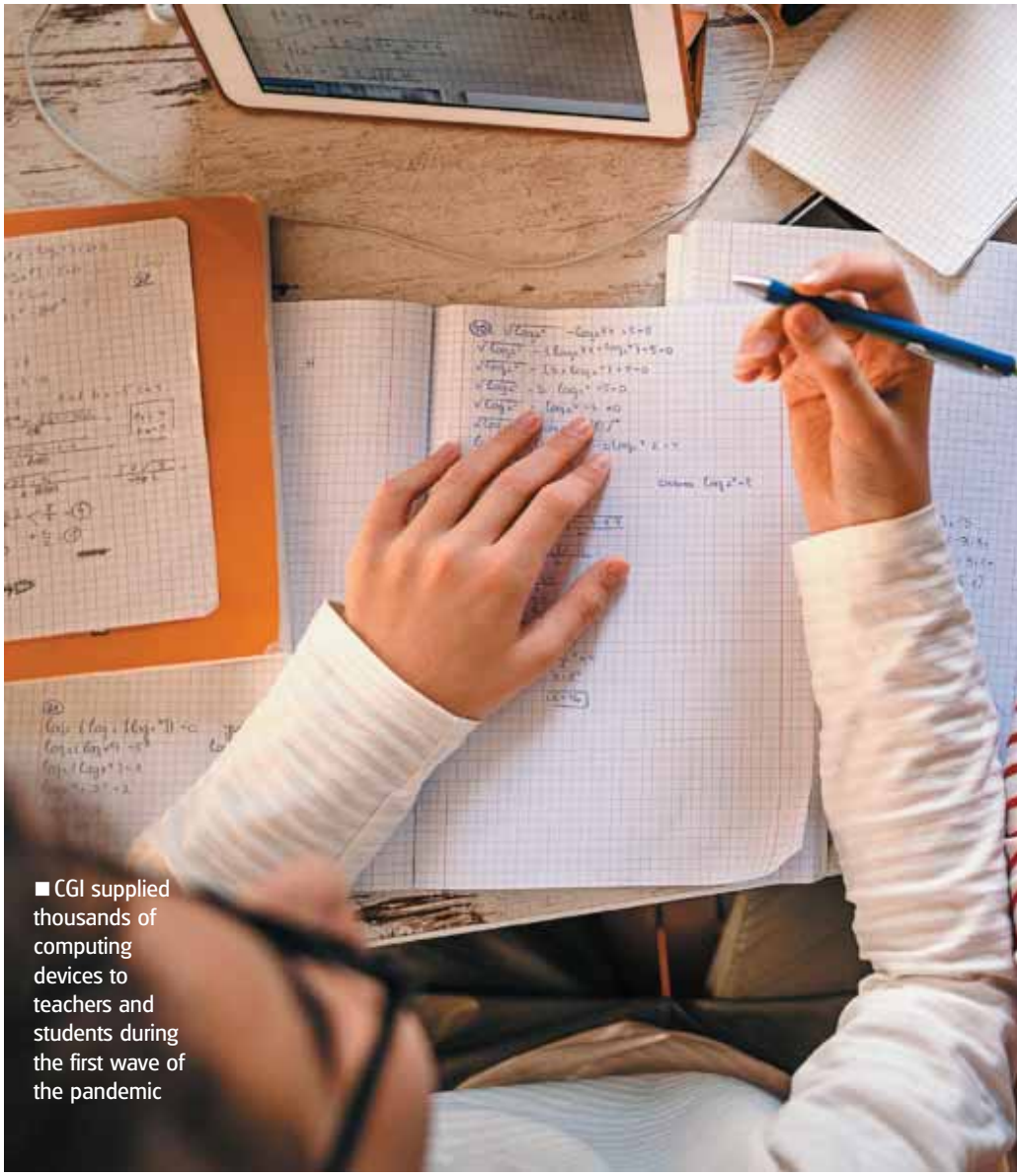
The pandemic has accelerated this strategy and, while it is hoped pupils will soon be able to return to their physical classrooms, it seems certain that some form of digital learning will remain in place, as it has a plethora of benefits for pupils, teachers, parents and carers.

Two areas that had started ground-breaking work before the pandemic were the Scottish Borders and Glasgow which, with CGI's help, were deploying their Empowered Learning solution as part of the Inspire Learning and Connected Learning projects

Originally seen as a way of removing the issue of inequality of access to digital learning, improving attainment and increasing efficiency, the importance of the projects has been highlighted by the closure of schools and the need for pupils to learn from home.

In both areas, iPads are being supplied to all pupils from Primary 4 (Borders) and Primary 7 (Glasgow) upwards with devices used by the younger children in class.

In Glasgow in particular, the roll-out is vast and specifically targeted at equity so that every child has access to the same tools for learning. When the initial lockdown hit, CGI made a huge effort to continue to supply devices to teachers and students. In the Borders this involved developing a home delivery approach where pupils and parents were helped to build and operate the devices with the aid of videos and phone support.



■ CGI supplied thousands of computing devices to teachers and students during the first wave of the pandemic

"It has been an effective partnership with our customers in both Glasgow and Scottish Borders to make sure that they can continue the delivery of education and we are very proud of that," said Richard Sadler, Director Consulting Expert for education at CGI.

With over 65,000 managed devices across both projects, the second lockdown has meant schooling has been easier this time round for those supplied with iPads and the knowledge of how to use them properly.

"Parents are talking positively about it – access to the device is a massive help – there has been a big difference between the first and second lockdowns," said Sadler.

"Educators also speak highly about having one solution across the board, with everyone having the same devices. Having a uniform approach really helps."



■ Richard Sadler

In Glasgow the expedited deployment phase for primary and secondary is now complete – ahead of the original end date of August 2021. An additional 6,940 iPads have been deployed for vulnerable children and all teachers and pupils from P7 to S6 now

digital learning



have their own tablets. Shared devices are being deployed across users in P1 to P6 and teachers in early year establishments.

"In Glasgow remote learning has been heavily reliant on tablets as part of the connected Empowered Learning solution," said Sadler. "We have seen a threefold increase in usage and active connections since schools adopted remote learning. This solution is allowing secondary schools to follow existing timetables and utilise digital learning for lessons."

There is also the opportunity for parents to receive a personalised code to access uploaded digital learning content for their children and over 4,000 new Apple TVs and projectors have been installed within classrooms as part of a huge upgrade to classroom AV infrastructure.

"Making sure there is a good quality, secure, safeguarded solution that everyone can use whether they are in school or not is really important to us," said Sadler.

An added benefit has been seen around mental health during an incredibly difficult year for young people. The iPads from Empowered Learning mean teachers can keep in regular contact with students and how they are feeling.

"Meaningful contact is very important for both students and their teachers during this period. Teachers are being supported and we are also trying to help parents wherever we can," Sadler said.

However, when the pupils are back in school full time and the pandemic is behind us, digital learning will continue because of the benefits it offers, including reducing the equality gap and helping to raise levels of attainment.

Whether at home or in a busy classroom, pupils can be given speedy feedback from teachers.

Using the devices in this way can save teacher time and increase engagement from pupils as they feel better supported and can be more creative as a result of all the ways the devices can be used.

"Personalised feedback and timeliness are really important in raising attainment and teachers are able to do that through apps, video clips and sound clips on pieces of work," said Sadler.

> Educators speak highly about having that one solution across the board with everyone having the same devices

"Also, via our Monitoring & Tracking web service we can capture key education attainment data and reduce the time it takes to do school reports. We try to take away the resource heavy activities in order to allow teachers to focus on teaching. Working with the Empowered Learning solution day to day gets the best outcomes for everyone."

This includes making sure the devices are safe and secure.

"We manage all the tablets and make sure the security updates are reviewed and updated at the right times so they don't affect the school day," explained Sadler.

"We also apply content filtering both at school and at home to safeguard the pupils. We work closely with customers on the apps they use to make sure all apps are assessed and secure for use. The app store is agreed with customers so schools can access the appropriate apps but not anything else. Empowered Learning is a fully managed but flexible solution."

Sadler is convinced the effect of the pandemic will make digital learning more widespread in future.

"In Glasgow and the Borders key large education transformation programmes had already started before Covid focussed on learning and teaching, equity of access to learning, raising attainment, creativity, mobility – the pandemic has just highlighted their importance."

Digital learning for all is here to stay. ■

cgi.com/uk

Climate for Change



THE HERALD – 2021 CONTENT SCHEDULE

Climate for Change/COP26

As Glasgow prepares to host the UN's Climate Change Conference in November 2021, The Herald is committed to working with key stakeholders from public, private and third sector to help change attitudes, spark debate and inspire climate action ahead of COP26. This will be delivered via regular coverage across a range of themes connected to the climate emergency, leveraging the strength of our trusted, respected brand and amplified across our multimedia network and via social channels.

OUR INITIAL SCHEDULE IS LAID OUT BELOW:

March: TRANSPORT (including cycling & walking) – The UK Government says "Making cycling and walking more attractive ways to travel and investing in zero-emission public transport of the future. Accelerate the transition to electric vehicles and transforming our national infrastructure to better support electric vehicles."

April: ANNUAL RENEWABLES REVIEW – a look at advancements in wave, solar, heat, batteries, and hydrogen.

May: FOOD PRODUCTION/BLUE ECONOMY – discussion on sustainably producing food from around our coastal towns and advancements and innovations around genetic farming.

June: EARTH OVERSHOOT DAY – A pause to reflect on the impact of humans on our natural resources – 4 weeks of coverage, with last years topics covering how we manage and design cities, how we power ourselves, how we produce food, nature and biodiversity and population impacts.

July: HOMES AND PUBLIC BUILDINGS – reviewing what is required to retrofit current stock and the future of new construction. UK Government says, "Making our homes, schools and hospitals greener, warmer and more energy efficient, whilst creating 50,000 jobs by 2030, and a target to install 600,000 heat pumps every year by 2028."

August: COUNTRYWIDE REVIEW – we speak with councils across Scotland and work with organisations within these local areas to share case studies of work already carried out and what each region is focussing on, such as Aberdeen's Hydrogen focus and Dundee's EV focus.

September: FUEL POVERTY – at a time of year when many will be considering the financial impact of a harsh winter, we address the socio-economic factors at play with a look at the growing UK consumer energy market

October: ANNUAL FORESTRY REPORT – UK Government says "Protecting and restoring our natural environment, planting 30,000 hectares of trees every year, whilst creating and retaining thousands of jobs.

November: COP26 MONTH – A comprehensive delivery of all news, analysis and opinion delivered daily across all channels.

December: SUMMARY – A review of the year's content. Scotland's climate legacy. Takeaway and handing the baton over for the next conference.

WE ARE KEEN TO WORK WITH A BROAD SPECTRUM OF ORGANISATIONS INVESTED IN AFFECTING POSITIVE CHANGE. IF YOU'D LIKE TO HELP US SHAPE THE DISCUSSION AS A COMMERCIAL PARTNER, PLEASE CONTACT OUR CAMPAIGN DEVELOPMENT TEAM: CAMPAIGN@HERALDANDTIMES.CO.UK

The Herald SEVEN DAYS



The pandemic has put mental health in education under the microscope, with better understanding of support needs inspiring innovative new ways to help youngsters in need of additional assistance

Creating a new community of self-awareness and support

By **Ann Fotheringham**

IT IS a shocking statistic, and one that has brought the mental health of students during the pandemic into sharp focus. The National Union of Students' study, Improving Mental Health and Wellbeing Support for Scotland's Students, published in October 2020, found that almost three-quarters – 74 percent – of students cited their first year of study as a time when they had mental health concerns.

"This is an alarming statistic and highlights the growing need for extra support and resources in this area," explains Professor Pamela Gillies, Principal of Glasgow Caledonian University and Lead Member for Mental Health at Universities Scotland, the representative body for Scotland's 19 higher education institutions.



■ Professor Pamela Gillies of GCU

"The pandemic is having a major impact on the mental and emotional health of many students. Feelings of uncertainty and anxiety are common as students, like the rest of the population, are forced to stay at home, cut off from their usual social networks. What should have been hugely formative years, amongst friends in a vibrant campus community where they could thrive, learn and grow, are being spent in isolation."

A range of support has been put in place across the HE sector to help students, including the Scottish Government's £3.5m investment in counselling services within universities, and a further £1.32m to support wellbeing services.

The Scottish Government also recently announced additional funding of £20 million for those students experiencing >>

<< hardship as a result of the coronavirus, helping to alleviate financial pressures which contribute towards mental health and wellbeing.

"GCU is also one of four universities piloting a project with charity Student Minds which is developing a Mental Health Charter accreditation scheme that will recognise and benchmark best practice in supporting mental health across the country's HE institutions," explains Professor Gillies.

"Universities Scotland's Mental Health Group, of which I am the Lead Member, recognised the need for a strong evidence base across Scottish HE regarding the prevalence and nature of mental health challenges faced by students, the landscape of provision and what seems to be working best across the sector to ameliorate the problem.

"Therefore, the group supported the development of the Thriving Learners' Study, a survey of 25,000 Scottish students, which will produce an important baseline as it involves all 19 Scottish higher education institutions and will provide a robust assessment of where we should invest our support and what this should look like.

"Carried out for us by the Mental Health Foundation and funded by The Robertson Trust, this is an action research initiative which will promote intervention of effective practice as it emerges."

The challenges of supporting students during a pandemic continue, as Professor Gillies explains.

"As a Principal, I am always asking myself if we are doing enough to support our students through this period and what more we can do," she says. "At GCU, we invited the Students Association President and Vice-President to join our daily Executive Covid-19 meetings to ensure that the student voice was central in decision making. This was critical given the pressures and challenges that many of our students were facing."



■ Reassurance and clarity is vital at all levels of the mission to support mental health

> **I am always asking myself if we are doing enough to support our students and what more we can do**

"Managing the initial rapid transition to a high-quality remote learning and teaching model when we had to close the campus last March was enormously challenging.

"Providing reassurance and clarity was critically important to everyone's wellbeing at the time. Enormous credit is due to the staff and students who have made this work. In many ways it has brought us much closer together as a community."

'Lockdown support has been a godsend'

MOLLY Webster's bedroom is set up, explains her mother, like an intensive care unit. "It has to be that way, because of all the equipment she needs," says Julie Webster. "Everything is delivered to us from the hospital to our home – feeding tubes, tracheostomy tubes, PPE..

"At the start of the pandemic, that suddenly stopped. All supplies were being prioritised for Covid patients. It was terrifying."

Molly, who is nine years old, lives in East Kilbride with her mum and dad, Julie and Craig, and big brothers Sam, 16 and 14-year-old Harry. She was born with spina bifida and hydrocephalus.

Following a brain infection as a baby, she now requires a feeding tube, and a tracheostomy and ventilator to help her breathe. She is non-verbal and visually impaired.

Caring for a child with complex needs during the pandemic is a huge challenge and Julie and Craig are juggling jobs – she is a health visitor; he is an engineer – and supporting their two sons with home learning too. Molly has not been in school since last March.

Julie says: "We can now access equipment again, but we live with a constant worry that Molly will catch Covid. In addition, she is now losing out on services she would have received at school – speech therapy, music therapy, physio, the hydro pool – and that is not good for her.

"We have noticed a change to her physical shape due to her scoliosis, for example, and that is not what she needs."

In addition to support from Molly's



■ Julie Webster with daughter Molly

She adds: "I don't think we can ever do enough to look after the mental health and wellbeing of our young people through this extremely challenging period.

"I think it's incumbent on us all to continue to create a positive and healthy environment for our students so they feel part of a supportive community which they can reach out to when they need to, whether that's in relation to their studies, to talk about how they're feeling or ask for urgent support if they are in crisis."

There is cause for optimism, says Professor Gillies.

"The roll out of new vaccines promises to bring the overall situation under greater control and will hopefully usher in a substantial relaxation of the social distancing laws and guidelines, allowing life to return to near-normal on campuses across the country," she says.

"Higher education institutions across Scotland are working together, with the NHS, students, NGOs, government and agencies in recognition of this serious growing issue and seeking to be more innovative and collaborative in delivering the support services required for our University communities."

Professor Gillies believes institutions are adopting a 'whole university holistic approach' to mental health and wellbeing, guided by Universities UK's Stepchange: Mentally Healthy Universities framework.

"There is real hope," she adds. "The profile and importance given to looking after our mental health and wellbeing has also risen substantially over the last year and this will reap rewards, both for students studying now and those who will follow in the future." ■



school, Julie says the outstanding assistance the family has received from Children's Hospice Association Scotland at Robin House has been a 'godsend'.

"They have provided storytellers, music therapy, even the Clowndoctors – whom Molly absolutely loves – all via Zoom, of course, and that has been amazing," adds Julie. "It has been difficult, but there are positives.

"Molly is doing really well – she has had fewer infections and is less tired.

"It's much, much harder for others - I have friends whose children have really struggled with the loss of routine that school brings – in lockdown, they have become aggressive, angry, unable to cope with being cooped up.

"I heard of one woman who said the only safe place she could take her son during lockdown, was the local cemetery. It's incredibly difficult."



■ Benjamin Davey is pictured with his sisters

Family values are at the heart of successful care

JUGGLING the care, therapy, and education of a seven year old with complex medical needs during a national lockdown is a huge challenge.

Alex Davey, who lives in East Lothian with her husband and three children, is living through a situation faced by parents across the country. Around 3.5 percent of children in Scotland attend special schools and all of them have a very high level of need, with schools acting as therapy centres as well as for education.

Alex's son Benjamin's needs include tube-feeding, epilepsy care and overnight ventilation. He was placed in the shielding category from March until August last year. All of his respite services and support from carers in the home were halted during the lockdown and the family took the difficult decision to also stop their home carers due to the increased risk of infection.

Having been reassured by medical professionals Benjamin is at low risk from COVID-19, Alex's main concern is that she and her husband will contract the disease, rendering them incapable of meeting his complex care needs, potentially for a long period. Charity Kindred Scotland has called for public acknowledgement of the extraordinary efforts of parents like the Daveys, as the challenges of caring for vulnerable children continue.

Its report, Covid-19 and Families of Children with Complex Medical Needs, in August 2020 highlighted the "devastating" impact of the pandemic lockdown on families of children with exceptional health needs surveyed parents from 17 local authorities in a bid to better understand the ramifications of the lockdown months on these vulnerable families. It found that 93 percent of these families experienced an impact on their ability to meet medical and care needs due to the pandemic; with 63 percent saying the impact was 'big' or 'severe'.

The Scottish Government and local authorities have worked hard to prioritise continued care and support for vulnerable pupils and those with complex additional support needs during the period of school closure. This has been backed up by what Children in Scotland's Head of External Affairs, Jacqueline Cassidy, calls the "phenomenal" response of third sector organisations to the Covid-19 crisis.

Last April, she cited an Institute of Fundraising and NCVO study which revealed 43 percent of organisations surveyed reported an increase in demand for their services.

"Government has been quick to reach out to organisations working with vulnerable children and families to try and understand their needs and how they might help," she said.

"In this time of crisis, they recognise the vital services that charities provide and the important relationships that they hold, and their importance in an emergency.

"The Third Sector is, and has always been, an emergency service. As this extraordinary situation continues, and afterwards, there needs to be a recognition of the emergency service that the sector provides.

More options on the route to employment



South Lanarkshire College is expanding its Foundation Apprenticeship programme to fully prepare students for the world of work, writes **Agnes Stevenson**

FOR SCOTLAND'S senior high school pupils, taking the first steps into the world of work can be a daunting process. The team at South Lanarkshire College understands the pressures facing young people and has expanded its Foundation Apprenticeship programme this year to help young people unlock their full potential. As a result, many students across a range of disciplines, are a little closer to achieving their dreams.

Myra Sisi, South Lanarkshire College's Associate Principal for the Faculty of Care and Lead for Developing the Young Workforce, says the Senior Phase and Foundation Apprenticeship portfolio had been developed to offer "different solutions for different pupil needs" and, building on the success of previous years, has now been increased.

"We developed our first FA programme, Children and Young People, in session 2018/19 and it was hugely popular and very successful," she says.

"FAs are qualifications within specific sectors, designed to provide young people with the opportunity to learn about the world of work and gain valuable industry knowledge and skills while at school.

"I felt very passionate about expanding the programme, and the college now delivers frameworks across two faculties – Accountancy; Business Skills; Social Services, Children and Young People; Social Services and Healthcare – and we are currently inducting students for a Pathway Apprenticeship in Construction.

In total, the college has 180 young people on FA programmes – 121 in first year, 59 returning – and Myra hopes those numbers

'Foundation Apprenticeship is the best thing I've ever done'

GEMMA Bruce was a shy teenager when she joined South Lanarkshire College's Foundation Apprenticeship scheme.

A few weeks in placement at a local hospice, as part of her one-year FA Healthcare award, changed everything.

"The FA has been the best thing I have ever done," explained Gemma, a former pupil of Duncanrig Secondary School in East Kilbride.

"My experience of the Kilbryde Hospice placement taught me skills and many important themes and messages.

"The best part was watching everyone grow and develop their confidence as well as making friends."

Lecturer Katya Lamb said Gemma 'barely spoke out' when she first came to the college, during her sixth year at school.

"After a few weeks in placement, she was more confident within herself and actively engaged within classes," explains Katya.

"She thoroughly enjoyed her placement and successfully achieved her FA. Gemma has now progressed on to our full-time HNC Social Services course, with a view to further progression onto university."



■ Gemma Bruce hopes to progress to university after her HNC in Social Services



■ The college's Foundation Apprenticeship frameworks cover accountancy, business skills, social services, children and young people, social services and healthcare with creative and digital media in the next academic term

will increase next year."We have worked closely with parents, too, helping them to understand the value of the qualification their son or daughter is hoping to achieve," she adds.

Partnership working, with local authorities and employers, is key to the success of Foundation Apprenticeships, says Myra. "We work productively and positively with South Lanarkshire and East Renfrewshire Councils, helping us to develop and improve our Senior Phase options for young people," she explains.

"This is about getting it right for every young person and providing a qualification they can embrace as part of their senior school years."

The Foundation Apprenticeship qualification is a balance between theory and vocational learning which increases the prospects of students progressing into employment. Students gain workplace experience, including generic employability skills which assist with transition into the working environment.

> This is about getting it right for every young person and providing a qualification they can embrace

Industry-specific skills are a mandatory element of the course, enabling students to progress and become qualified practitioners, and work experience is a vital element. "The college has in place strong links and partnership agreements with South Lanarkshire Council and local employers to provide work experience for our students,"



■ Myra Sisi, the college's Associate Principal for the Faculty of Care and Lead for Developing the Young Workforce

says Myra. "This, along with a proven track record in delivering a wide range of vocational courses to school pupils, was an ideal opportunity to deliver a programme of study which would promote work based learning and progression to employment or further study."

As part of its commitment to the Developing the Young Workforce programme, South Lanarkshire College works in partnership with schools, local authorities, Skills Development Scotland and industry to increase work experience opportunities for senior phase pupils.

"We recognised, in particular, that there was significant demand for the Foundation Apprenticeship framework in Children and Young People and agreement was reached with South Lanarkshire Council and local employers that workplace experiences would be provided," she says.

"Within the school provision the curriculum is aligned to key sectors, of which childcare is one. Labour market research highlights that there is a skills gap within this sector and work-ready employees will be required.

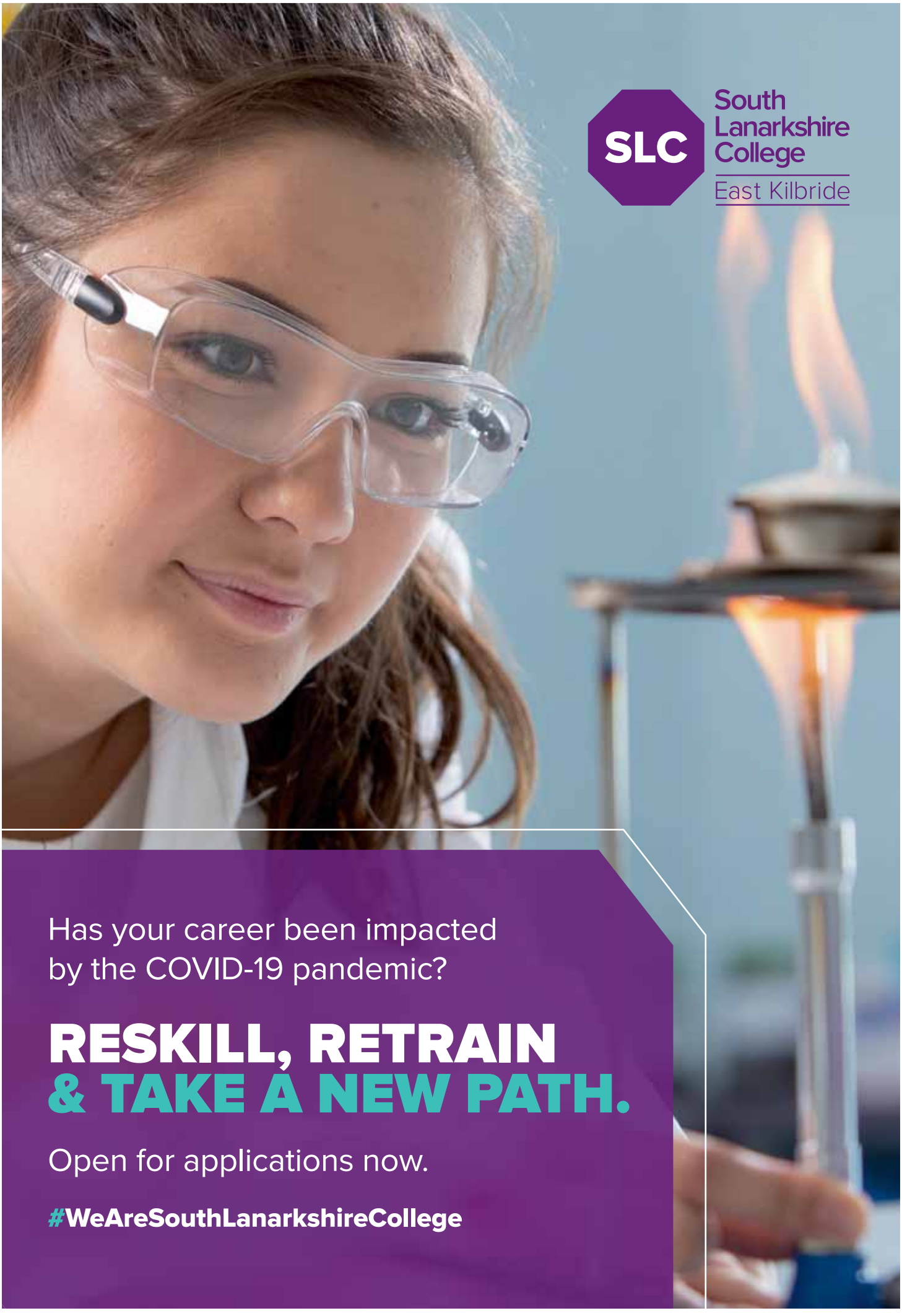
"So we are helping to create a much-needed workforce for a sector vitally important to the local economy."

Foundation Apprenticeships can also provide progression pathways to a Modern Apprenticeship or Higher National Qualification, or contribute to a Higher equivalency at an A, B or C grade depending on University and Degree choices. During the pandemic, South Lanarkshire College has worked hard to ensure teaching and learning continued as effectively as possible, with support from South Lanarkshire Council.

The local authority provided FA pupils with Chromebooks and implemented practice sessions prior to the current lockdown to prepare pupils for remote learning. "Since the second lockdown began in January we have delivered remote learning, working with South Lanarkshire Council to get resources out to pupils working at home," says Myra.

"That has worked very well and we will continue to develop that support in line with Government guidelines as long as restrictions remain in place."

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A less than fair exchange?

One of the casualties of Brexit was the Erasmus+ exchange programme. Here Andrew Collier speaks to Sir Anton Muscatelli about the switch to the new Turing scheme and how it might affect our higher education establishments

FOR centuries, Scotland has seen its education system as profoundly European. It has sent its students to the continent since at least the middle ages and welcomed them here in return. That relationship has, however, just undergone a profound change.

As part of the Brexit arrangements, the UK Government has elected to leave the Erasmus+ exchange programme that allows Scottish students to study in the EU and their European counterparts to come here.

Instead, ministers at Westminster are to introduce a new scheme called Turing which is meant to offer many of the same benefits. However, details of this are currently sparse and, crucially, Turing will only work in one direction: it will not accommodate overseas students wanting to study here. The decision has been greeted with despair by Scotland's higher education sector.

Richard Lochhead, the Higher Education minister, has described the abandonment of Erasmus as a "huge blow" and said it is "simply unacceptable". The Scottish Government, he adds, is looking at alternative options.

The move to withdraw from Erasmus sits alongside another consequence of Brexit: EU undergraduates studying in Scotland will no longer receive the same fee-free education as their home-based compatriots.

Instead, they will have to pay the full fees applicable to all overseas students. In the case of specialist courses in areas such as medicine, this could be as much >>

<< as £50,000 a year. Unsurprisingly, the country's higher education institutions are bracing themselves for a potentially substantial impact. Sir Anton Muscatelli, the Principal of Glasgow University, sees Brexit as having a number of important consequences that go far beyond the basic question of fee income and funding.

"In terms of total effect, there are different dimensions," he says. "In particular, there is the question of the loss of talent to the Scottish university sector and economy.

"We currently have about 60,000 international students from 180 different countries studying in Scotland. That has a direct impact that is huge. It's been calculated this is worth about £2 billion to the Scottish economy."

Sir Anton points out that international students – not all are from EU countries, but many are – study subjects such as engineering, computer science, statistics, and biosciences. In the aftermath of Covid-19 in particular, these skills are going to be hugely useful to our own economy.

"Then there's also the cultural sector. A lot of people come to Scotland to study the arts and humanities. The big question for us now is whether they will come in the same numbers now they have to pay international fees. At the moment, we just don't know."

The country's extremely strong reputation for offering a very high-quality learning experience – Glasgow and Edinburgh universities consistently rank in the world's top 100 – means that overseas students will continue to be attracted here. However, in EU terms, they are now likely to be from richer families in richer member states.

The funding mechanism is complex – as EU students (at Glasgow, they number about 3,500) until now have been effectively categorised as home students, higher education institutions will not necessarily directly lose money. Much depends on how the Scottish Government will choose to fund the places they used to occupy.

Indeed, it is possible that Scottish universities may actually earn extra money because of the higher overseas fees they must now change – though as Sir Anton points out, Glasgow University is full to capacity anyway and so cannot simply add extra student places, meaning there is a limit to what it can do.

"In the short term, there will be an increase in the number of Scottish students, but their pattern of demand is not exactly the same. So the cost to the Scottish economy is that these EU students will not come in the same numbers and will not spend money here.

"Then there's the really important issue of productivity and growth. Scotland is really strong in areas such as fintech, advanced manufacturing and life sciences. What happens if we can't replenish those skills? Scottish students may not be willing to study the same subject areas. Once again, at present we simply don't know."

Sir Anton alludes to another important consideration. Following their period of study, many EU students choose to stay on here and make their homes, careers, and families in Scotland.



■ Sir Anton Muscatelli, the Principal of Glasgow University believes Brexit will have consequences beyond fee income and funding, such as loss of talent and specialisms vital to our post-Covid economy



■ There are currently 60,000 students from 180 countries studying in Scotland



> **Then there is the really important issue of productivity and growth ... what if we can't replenish those skills?**

That means they demonstrate an ongoing contribution in commitment, taxes, and other economic benefits. "That has reversed the demographic decline we have seen over the last 10 years."

Although the Erasmus scheme is different in that it gives EU students the benefit of a semester or a year here rather than a full course, it can create added value by encouraging participants to return to Scotland to take up postgraduate degrees and other qualifications.

"That softer impact of Erasmus has also been important. And it's been bilateral >>

Positives and negatives despite Brexit fog



■ Graeme Roy, Director Fraser of Allander Institute says that while there are a lot of unknowns and risks associated with Brexit, a UK degree will still hold appeal to international students

FOR the education sector and other parts of the Scottish economy, Brexit is still like gazing into a crystal ball. No-one yet really knows what the long-term implications will be: we can only make an informed guess.

One organisation keeping a keen eye on developments is the Fraser of Allander Institute at Strathclyde University, which monitors and carries out research on economic challenges and opportunities.

Graeme Roy, its Head of Economics and Director, sees both potential benefits and disadvantages for higher education. "The university sector in particular has always been quite clear about the value of integration and close ties with Europe and beyond and the value that brings," he says.

He points out that in the past non-EU students have actually been more valuable than EU ones because of the higher fees they are charged. "Students from the EU are really important, but universities have had to cast the net wider to attract others.

"With Brexit, Scotland will be less attractive than it has been in the past because of the new fees but against that, it does provide opportunities for universities to access wider markets and attract students from a much broader canvas."

My Roy says that we do not yet know how many EU students will be put off by higher fees. "They will get a good quality education here and we have never known what the price point is for that. Soon, we will know about their willingness to pay.

"The deal the UK struck with the EU also provided for a lot of scope in terms of continued collaboration and research funding. But there are also questions about the talent flow in terms of recruitment and the links between universities and industry.

"In areas such as advanced manufacturing, companies operate across the EU, and if there is any disruption there, then there could be implications in terms of interaction with higher education institutions. There are quite a lot of unknowns and risks."



Like others monitoring the Scottish economy and higher education sector, Mr Roy believes that there is an inherent attraction in the quality of the degrees and qualifications that our higher institutions can offer.

"I wouldn't underestimate the value of a degree from a UK institution and how valuable that will be to Europeans, plus of course we are English speaking. There are still core fundamentals that are valuable."



■ The proposed Turing scheme allows Scottish students to go abroad but does not accommodate overseas students wanting to study here

<< – one of the big aims we've had at Glasgow University over the past five to 10 years has been to increase the number of students going abroad.

"That's important in terms of an international perspective and for increasing their language and other skills. We've managed to increase our outward mobility to the point where at least 20 per cent of our students have had an experience overseas."

In the study of law, Sir Anton adds, that figure rose to about 60 per cent. "These are hugely important formative experiences. The new Turing scheme allows the outward bit but not the inward bit.

"It could perhaps be used to fund some of our outgoing students to go to European universities, but it's all very messy and not very well organised compared to Erasmus. And there will be a financial impact to the university in participating in other programmes."

He continues: "The difficulty now is that we have to maintain bilateral links with European universities. We will tell them that we want to send them some students and they will ask what they are getting in return. It makes it much more difficult to negotiate and to strike up international relationships." Sir Anton admits to looking with some jealousy at comparable higher education institutions across the water in Northern Ireland, where the Irish government in Dublin has agreed to pick up the cost of continuing to fund their Erasmus programmes.

"I don't have any kind of a grudge over that as it means their students will continue to benefit, but I do hope that the UK will think about its position over time.

"There has also been some discussion that Scotland might wish to strike up a separate Erasmus relationship, but that clearly depends on the EU regulations, which are still to be published."

He also worries that the requirement for EU students to pay full overseas fees will alter the pattern of demand for courses as those who are paying money tend to want an immediate return on their financial investment in terms of jobs and careers.

"To be clear, we do continue to punch well above our weight as universities and we will continue to attract these international students. But they won't necessarily stay because there won't be the same attraction to do so. They won't feel that Scotland has provided that with an education that they then want to repay."

Sir Anton does concede that, depending on funding grants, fee income could conceivably rise, but he adds: "That's still small game compared to the massive cultural loss that Scotland will suffer.

"In terms of universities, there will also be a flight to quality. We have already seen that over the last year during this pandemic. Those like Glasgow that are faring well are having a differential experience to others."

At least there is better news on research funding, with the UK agreeing to become part of the EU's Horizon Europe development programme. "That's really important for us as its predecessor, Horizon 2020, as it accounted for about 12 per cent of our total research income.

"However, a key issue will be if the money the Treasury will pay will be additional to UK research and innovation funding, as it currently is. At present, we don't know."

Glasgow University, Sir Anton says, is very much part of a wider and critically important landscape. "We have had to work very hard over the past few months but at the end of the day, we are very much European by nature and by design.

"We want to be part of an open and welcoming country. We know that open borders work best in terms of ensuring that we prosper. And if we prosper, the country prospers as well." ■

> **We want to be part of an open and welcoming country. We know that open borders work best in terms of ensuring that we prosper**


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Take a hands-on approach towards securing a career

Recent adaptations to Foundation Apprenticeships during the pandemic have allowed young people in Scotland to continue benefiting from a wealth of industry experience



■ Jade Hughes (18) a former Falkirk High School pupil studied for her Engineering Foundation Apprenticeship at Forth Valley College

ACROSS Scotland employers, schools and learning providers have made changes to support pupils during the most challenging year any are likely to face.

For pupils across the country, the changes have also included how they have been supported to complete their Foundation Apprenticeships.

And with pupils heading into option choices, Foundation Apprenticeships are available across Scotland again.

Foundation Apprenticeships offer benefits to pupils providing industry knowledge, experience and insight, as well as a qualification at SCQF level 4, 5 or 6.

Introduced over five years ago as a senior phase option choice, more and more pupils each year are benefiting Foundation Apprenticeships.

Pupils gain meta-skills – like communications, creativity and problem solving – through industry experience and links with employers.

Skills Development Scotland had been working with SQA and others to enhance and adapt the qualifications, work that was accelerated as the impact of the pandemic and the requirements of physical distancing became clear.

These enhancements and adaptations have supported increased flexibility for delivery during the pandemic.

The skills body and qualifications organisation worked with learning providers, education partners and industry representatives to support pupils completing their Foundation Apprenticeships, those returning for their second year and new starts last year.

This included support to complete the Foundation Apprenticeships work placement element online and further development of a work-based challenge for pupils to get real industry insight.

Skills Development Scotland's director of critical skills and occupations Diane Greenlees said: "Since their introduction, the strength in Foundation Apprenticeships has been collaboration.

"Schools and local authorities have been working with learning providers and employers for the benefit and choice of learners. These partnerships have meant that pupils have been able to continue to benefit from Foundation Apprenticeships during the past year.

"Like every aspect of education over the past year, Foundation Apprenticeships have changed and adapted.

"As part of the planned development of Foundation Apprenticeships, the adaptations and enhancements will further build confidence with schools, learners, and parents on their value for the next academic year and beyond."

Scottish Government – through the flagship Developing the Young Workforce programme and the Young Person's Guarantee – is committed to the role apprenticeships and work-based learning will play at the heart of economic recovery.





■ Kyle Crews (18) is a former pupil from Lornshill Academy who recently studied for an Engineering Foundation Apprenticeship

Apprenticeships directly support the Young Person's Guarantee, which ensures access to training, employment, or an apprenticeship for everyone in Scotland aged 16 to 24. Diane added: "Work-based learning pathways and apprenticeships remain crucial and will equip young people with the skills employers want."

Find out more about Foundation Apprenticeships at apprenticeships.scot

Academic links with industry create new opportunities built on strong foundations

THE partnership between learning providers and local employers is paying dividends for pupils across Scotland.

Forth Valley College sees Foundation Apprenticeships as a vital choice for pupils, providing them with a head-start in the world of work. Principal, Dr Ken Thomson OBE, said: "Foundation Apprenticeships are essential for us to help meet the future demands of employers and provide that much-needed pipeline of young people into the workplace.

"Foundation Apprenticeships give young people a head-start in their career, as the qualification allows them to move straight into the world of work. Every day, we see the positive impact on pupils when they have the opportunity to study at college and work with employers. As many pupils thrive when they are given these opportunities.



■ Principal, Dr Ken Thomson OBE

Independent learning provider TIGERS says Foundation Apprenticeships give pupils greater employability skills as a tangible reward for their efforts.

Brian Carmichael, construction director, TIGERS said: "TIGERS' Foundation Apprenticeship programme can play a key role in bridging the gap between employment and education.

"This is supported through the integrated design of the qualification which ensures learners engage with curriculum requirements, and employers, to develop skills and gain invaluable industry experience, which will help to prepare them for the world of work. While offering sector specific learning, Foundation Apprenticeships develop employability, leadership and meta-skills, which will support senior phase pupils to develop their infinite potential."



■ Brian Carmichael from TIGERS

Dundee & Angus College, which has 25,000 students based across three campuses in the Tayside area, also strongly advocates Foundation Apprenticeships and believes the programme can often prove to be the passport towards a learner landing a dream job.

Principal Simon Hewitt said: "We've got many examples of where Foundation Apprenticeships have led to young people embarking on an exciting career in their chosen field, going on to further study, obtaining jobs and apprenticeships, all thanks to the numerous skills they gained on the programme.



■ Principal Simon Hewitt

"At Dundee & Angus College, we strive to produce more successful students and Foundation Apprenticeships play a very significant part in helping us achieve that goal."

West Lothian College has been an advocate of Foundation Apprenticeships for many years and believes that teamwork involving colleges, employers and local authorities is the key ingredient behind the continued success of delivering them.



■ Principal Jackie Galbraith

Principal Jackie Galbraith said: "Colleges, councils and employers have different but complementary roles to play to ensure success for our young people.

"It is essential we all work together to promote and deliver work-based learning opportunities for senior school pupils.

"Innovative work placements are crucial to developing the skills required by each Foundation Apprenticeship framework, resulting in young people being well equipped to meet the needs of the local economy."

As the pandemic increases our reliance on the digital world, children's charity Aberlour is committed to ensuring no-one is left behind, writes **Andrew Collier**

'In this age, having a laptop isn't a luxury ... it's an absolute necessity'



THE Covid-19 pandemic has pulled nearly all of us into the digital revolution. So much of what we do – shopping, learning, working, even daily functioning – now takes place online that it is increasingly difficult to avoid it.

Not everyone, however, can reap the benefits. The poor, the disabled, the elderly and the vulnerable are all too often still excluded from this brave new world. There is a real concern that this gap between the Internet haves and have-nots is going to grow.

This digital access inequality is of profound concern to the third sector in particular. Scotland's largest children's charity is now mounting a campaign to address the issue and to ensure that whatever their circumstances may be, no-one is left behind.

Stirling-based Aberlour – its name comes from the fact that it was originally located in the north-east – has been active since the 19th century.

It provides dozens of services to vulnerable children, young people and families right across the country. These include mental health, drugs, alcohol and disability support. It also delivers the Scottish Guardianship Service on behalf of the Scottish Government, supporting unaccompanied asylum-seeking and trafficked youngsters. Martin Canavan, who is Aberlour's Head of Policy and Participation, says that the current pandemic has not directly caused digital exclusion but has served to highlight the problem. "I think it has exposed something that to a degree had previously been hidden," he adds.

"It became apparent to us that there were significant numbers of children and young people who weren't experiencing

Device proves the key to unlocking Katie's potential

14-YEAR-OLD Katie† didn't have a laptop or tablet before the pandemic. When lockdown happened, she couldn't do her schoolwork. Aberlour was able to provide her with a laptop to help her stay connected to school. She was able to catch up on seven months of schoolwork and her teachers said they hadn't seen her do so much work in years.

Katie says: "At the start of lockdown I was trying to do my schoolwork on my mum's phone, and it was pretty much impossible. I was concerned that I was going to get left behind. Thankfully, that changed, and the school has told me that I've managed to do more work during lockdown than I have during three years at school! I couldn't have done that if I hadn't got the laptop from Aberlour."

The laptop has also enabled Katie's support worker Anne Grant from Aberlour's Youthpoint Moray service, based in Elgin, to stay in contact with her through-out lockdown. The laptop has helped Katie with her homework and to take part in online activities such as Aberlour's young mentor group and cooking, as well as staying in touch with her friends via Zoom.

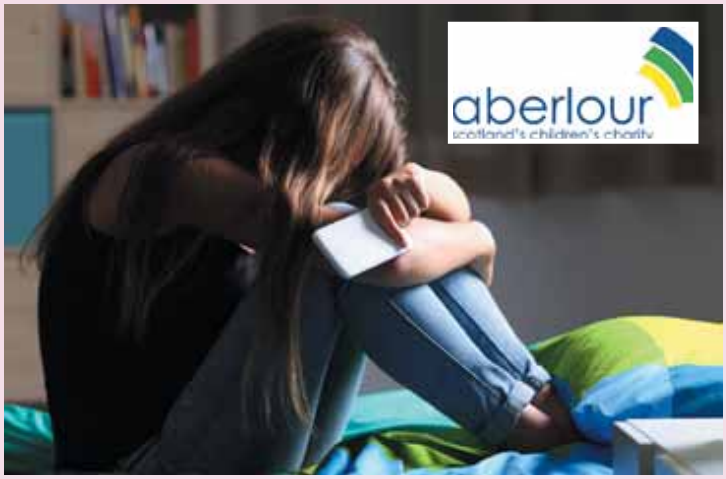


The laptop enabled Katie to catch up on her schoolwork

Anne said, "It's been great to watch Katie come so far; her self-confidence has come on leaps and bounds and she can see a much brighter future for herself now."

† *name changed to protect individual's privacy*





Aberlour has just published its own manifesto calling on all political parties to commit to a national digital inclusion scheme for low income families

lockdown in the same way as others.

"Like other organisations, we were determined to keep as many of our services going as possible through the pandemic and so we moved almost overnight to delivering online. But it became clear that because of their circumstances, many of the families we work with simply didn't have digital access."

These disadvantaged service users – people on low incomes, in poverty and often experiencing extreme financial hardship – either didn't have the necessary devices, couldn't afford broadband or had issues with data and credit.

With these families needing continuing support and often suffering from lockdown isolation, Aberlour was faced with a huge challenge.

Working alongside the Scottish Government and partner organisations such as Children First, it sourced digital devices such as laptops and tablets and where necessary provided data credit to keep its clients connected to them. "That meant hundreds of families were able to receive the vital help they needed," Martin explains.

Aberlour also promoted and raised extra money for its existing Urgent Assistance Fund, historically used to help pay for essential goods for families that had slipped through the net.

After recognising the scale of the problem and responding to it in a practical way, Aberlour is now working to try and influence politicians to get them to fully recognise what needs to be done.

"We've just published our own manifesto for the forthcoming Scottish Parliament elections in May, calling on all political parties to commit to some form of national digital inclusion scheme for low income families across Scotland. We want to make sure that the current gap doesn't persist.

> All young people need equal access in order to home learn, while parents may need access to welfare and essential services

"We need to recognise that in this age, having a laptop and being connected to broadband isn't a luxury – it's an absolute necessity. Everyone needs this. If people don't have it, then it becomes an inbuilt inequality."

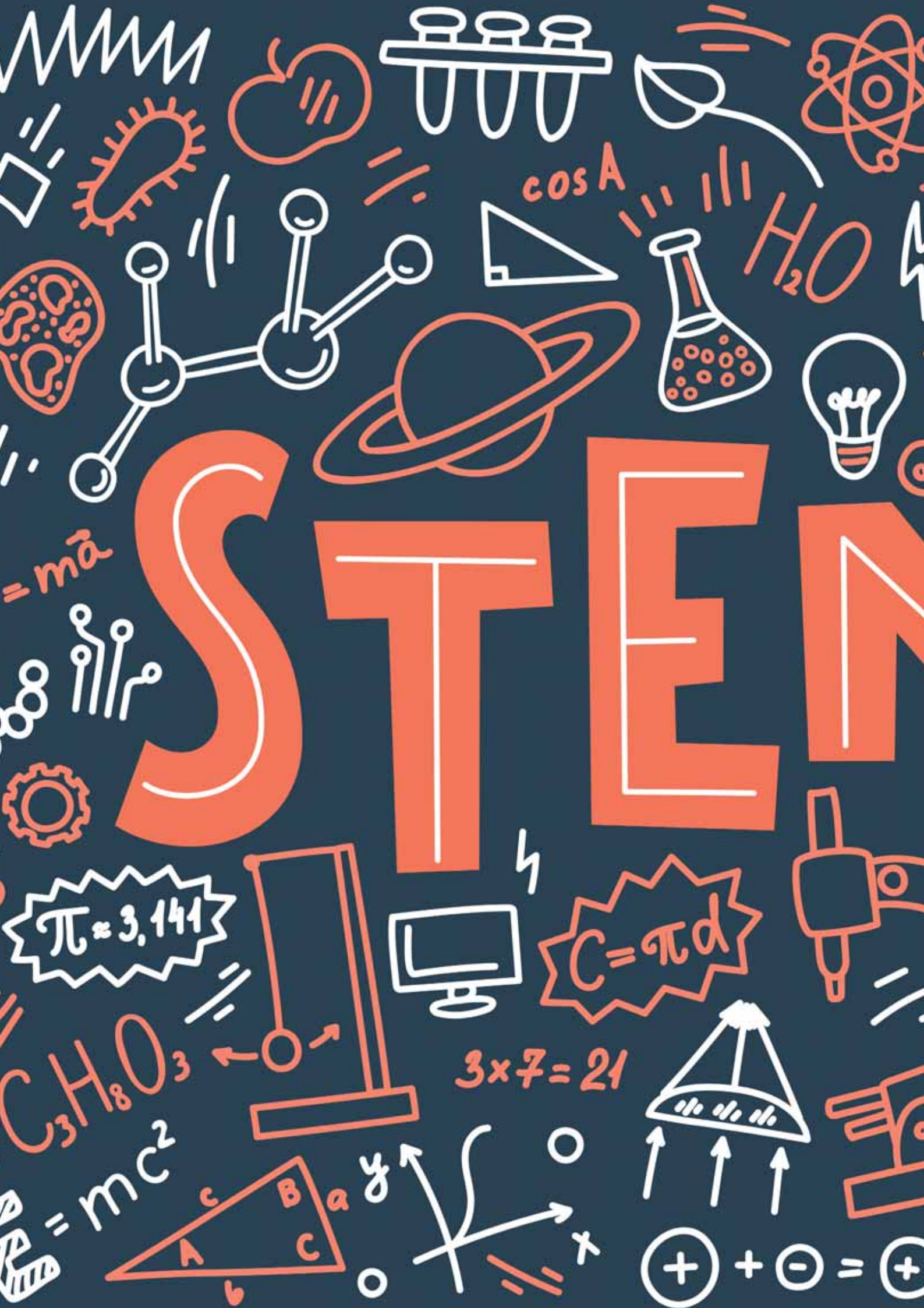
Clearly one hugely important element of addressing digital exclusion is to allow young people the opportunity to take part in remote learning while the country's schools are closed.

Martin points out that families with a number of children might well need more than one device as they could each be doing different schoolwork at different times. "All young people need to have equal access in order to be able to home learn, while parents may need their own access to welfare and essential services. The issue is much more nuanced than just having an internet connection."

Fortunately, Aberlour has been able to provide devices for most of the children it works with. "But we have found there is a lack of consistency in provision across schools and even within local authorities.

"That needs to be recognised and addressed, though I know that the Scottish Government has already committed to doing something about it." ■

aberlour.org.uk


STEM
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Now is the time to put the lab in our oratory

In a new world where science is increasingly recognised as key to our very survival, it's imperative we talk about the career opportunities that stem from science subjects

By **Agnes Stevenson**

LAST year the first cohort of students graduated simultaneously from both Stirling and Heriot-Watt Universities. They became the first teachers to have completed a new joint undergraduate programme that delivers a degree in either physics or chemistry and education at the same time.

This innovative approach to teacher training was set up with additional funding from the Scottish Government as one of a number of initiatives to tackle the shortage of STEM teachers in Scotland.

From speeding up the qualification process, to awarding bursaries of up to £20,000 to encourage career changers to become science teachers, the Government has been facing up to the joint issues of a lack of suitable teaching staff and a decline in the performance of Scottish pupils in maths and science by introducing new measures at every stage of the curriculum, including increasing entitlement to early years education from 600 to 1400 hours. It seems that it is never too early to start children on the path towards a future in STEM.

But why has it come to this? Historically, Scotland led the way in engineering and scientific excellence and it's not so long ago that our education system outperformed the rest of the UK. Yet according to figures published in the PISA (Programme for International Student Assessment) report, Scotland has sunk significantly down the league tables since the year 2000, when the country was ranked 'above average' in reading, science and maths, with scores of 526, 533 and 522 respectively.

The most recent figures place Scotland at 504, 489 and 490 in the same categories, though 'reading' is showing signs of a positive recovery.

These worrying figures can only have been made worse by the COVID-19 crisis, which has caused serious disruption to learning and exposed the depth of the poverty and technology divide that has seen some children struggling to gain remote access to education.

Watching this closely has been >>

<< Professor David Cole-Hamilton, Emeritus Professor at the School of Chemistry at the University of St Andrews, a fellow of the Royal Society of Edinburgh (RSE) and interim Chair of the Learned Societies' Group for Scottish STEM Education (LSG).

The LSG comprises the RSE, Royal Society of Biology, Royal Society of Chemistry, Institute of Physics, Association for Science Education, Scottish Mathematical Council, Edinburgh Mathematical Society, British Computer Society and the Institution of Engineering and Technology.



■ Professor David Cole-Hamilton

Its remit is to identify and promote priorities for STEM education in Scotland, including through providing policy advice to government, parliament, and other decision makers.

According to Professor Cole-Hamilton the most dramatic decline in the PISA figures can be seen in the attainment of 15 year olds in the middle of the past decade, just at the time the new N4 and N5 qualifications were introduced through the Curriculum for Excellence.

"We hoped at the time that it was just a blip but that was not to be the case," he says.

However, he points to the fact that it is not just that standards have fallen, but also the number of pupils electing to take science subjects has dropped significantly too.

The roots of the issue start in primary schools, he believes, where too few teachers feel confident in delivering science education.

The Government rejected recommendations to introduce science into the training of primary teachers,



Skill shortages create real chances

STEM education can be the key that opens doors to careers crucial for the economy

AT A TIME of rapid change the need for a workforce competent in science and technology has never been greater and this is only set to rise. According to the World Economic Forum, one third of the skills that will be needed by 2030 will be wholly new.

If the Scottish economy is going to harness its share of opportunities in green engineering, big data, biochemistry, robotics and other advanced technologies, Scottish businesses are not only going to have to tap into a scientifically-literate workforce but will have to contribute through continuous training and developing of staff.

This is going to be particularly true post-COVID-19 as the pandemic has brought about rapid change in the economic landscape, shrinking some traditional industries such as retail and hospitality, while bringing about expansion in others.

In its report 'Upskilling Scotland" the Scottish Council for Development and Industry (SCDI) describes 'The Fourth Industrial Revolution' and the impact this will have on careers and the economy.

It predicts technological change will be continuous and that instead of completing education before starting work, staff will find themselves in the situation where training is ongoing, as companies continually reshape to meet new demands and opportunities.

At the moment, however, the report states nine out of 10 organisations lack the digital skills they need to move forward, despite data skills being key to underpinning growth in every sector.

> **These are the jobs of the future and we need to do more to encourage young people**

The report also warns that current careers advice services lack close links with industry and are failing to identify the potential opportunities that exist in Scotland's science and technical sectors, so young people are not getting on to the path that could lead to a STEM-based career. This is a view backed up by Alison Culpan, Director of ABPI (Association of British Pharmaceutical Industry) Scotland, who says: "The pharmaceutical industry and the life sciences sector continue to be among Scotland's great economic success stories.



■ Alison Culpan, Director of ABPI

"Just this month analysis from the respected Fraser of Allander Institute revealed that direct employment in the pharmaceutical industry has grown by nearly 10% between 2016 and 2018, and the average salary sits at just below £40,000.

"Having an education in STEM opens the door to a whole host of careers within our sector. However, despite this pull, awareness of what a career in pharma looks like is still far too low and must change if we are to attract the next generation of talent.

"Our analysis shows there are likely to be skills shortages in key occupations such as genomics, clinical pharmacology, immunology and bioinformatics in the coming years.

"These are the jobs of the future and we need to do more to encourage young people to study STEM subjects in the first place. This will require a joined-up effort from government, industry and educational institutions." ■



■ Primary school pupils are often inspired by their science lessons

although SSERC, through its primary science cluster programme and since 2016 the RAiSE programme (Raising Excellence in Science Education) has been supporting the delivery of science in primary schools.

"It is only when they feel confident that teachers will be able to engage with pupils on science."

But an issue persists in secondary schools, he says, where current emphasis on studying fewer subjects but at greater depth over a shorter time period has come at the expense of science.

"When it comes to making their choices about which subjects to follow, it is science that is dropping off the timetable."

However, Professor Cole-Hamilton is optimistic the independent review of the Curriculum for Excellence, currently being carried out by the OECD and set to report in June this year, will provide solutions to the issue including, he hopes, a recommendation to spread out the teaching of National 4 and National 5 levels in science subjects, which are currently taught together despite being distinct courses.

"This sort of multi-level teaching just doesn't work very well."

Meanwhile, in March 2020 the Scottish Government published the second annual report into its STEM Education and Training Strategy, in which Richard Lochhead, Minister for Further Education, Higher Education and Science, said that "good progress" had been made in driving forward improvements in STEM learning and teaching in all settings. He did warn, however, that it would take "time and patience" to see the long-term impact of the measures that the Strategy is now implementing. However, he said by 2022, sizeable steps forward would have been taken in both the numbers of STEM students, the confidence of teachers to deliver science subjects in early years settings, greater collaboration between schools, colleges and employers and an increased understanding among the wider population of STEM benefits and careers potential. Already STEM teacher training entrants have increased from 380 in 2015-6 to 595 in 2018-119, suggesting that Government incentives and new approaches to training are having a positive effect.

> **STEM teacher training entrants have increased, suggesting Government incentives are having a positive effect**

That report was published just as the country was heading towards its first pandemic lockdown and so it won't be until the subsequent report appears this March that the impact of the pandemic on education and the Government's plans for STEM disciplines will start to become apparent.

Ironically, it may be that the effects of this last year of disruption will not be completely negative as science and technology have been at the forefront of the news agenda, raising awareness among pupils and their parents that careers in STEM subjects can be both personally rewarding and have benefits for society as a whole. ■

Inspired move into the world of science

LAST year Connie McFadden (22) began an MRes in Molecular Biology. She is based at the Duncan Laboratory at the University of Strathclyde, home to Medicines from the Sea, who are researching new antibiotics and other pharmaceuticals of marine origin.

She joined after completing a first class honours degree in Forensic Investigation at Glasgow Caledonian University and her longer term plans include a PhD.

However, if it were not for the timely intervention of a teacher, Connie may have missed the chance to work in this fascinating field, where STEM subjects are helping to improve lives, consolidate Scotland's reputation as a place of scientific excellence, and create exciting careers.

"I was in the fifth year at the time and my chemistry teacher was John Anderson, now rector of Jordanhill School. I was getting reasonable marks in chemistry, but I was in a class of really high achievers and so I felt as if I was lagging behind. Then one day Mr Anderson took me aside and told me not to be intimidated by the other students. I still remember his words, he said: 'You have the makings of a really good chemist.'"

Later, it was that same teacher who suggested Connie, who was undecided about which path to take after school, should study for a Forensic Investigation degree, setting her on a path to a career in science and research.



"What I loved both about my degree and now my research masters is that both have practical applications."

Connie believes if young people knew more about the range of science courses on offer and the jobs they could lead to, then the uptake of STEM subjects would be higher.

"It is only now that I recognise how many great career options there are and I feel very lucky to be working a field that I love," she says.

An exploration of new frontiers

Launched by a University of Edinburgh student to showcase Scotland's rapidly expanding space industry, the Women in Space Conference next month is on a swift upwards trajectory

By **Kim McAllister**

SPACE has become such a hot topic in Scotland that one student has decided to arrange her own virtual conference.

Christina Macleod *(below)*, a fourth year mechanical engineering student at the University of Edinburgh, is running a three day "Women in Space" event in March.



She said she was surprised, as a student, to have stumbled on so many women involved in the space sector and wanted to help build the network.

"I was constantly hearing about space events, alongside women in STEM events, but felt that a 'women in space' community was missing," she said.

"The Scottish space sector is also an extremely interesting place to be at the moment, and I wanted to share that more with the world, to put Scotland on the world stage in terms of attracting diverse talent to the space sector. Thus, the Edinburgh Women in Space Conference was born. From there, it has grown to a larger international event, with speakers from around the world, as we realised the importance of showing international collaboration within the space sector."

As a final year student, she knew she couldn't do it alone – and with the pandemic affecting students' schedules and forcing them to rethink their living arrangements, a team became really important. "Finding a team was a great experience, as I had applications from individuals across the world, which really demonstrated to me the power of social media," she said.

"I think that the most difficult part was narrowing down who would suit each role best. Hosting a conference is quite the undertaking, so I wanted to ensure that the conference had the best people for the job, and that everyone would work well together. Although many of us are from institutions within Scotland, there are individuals from Europe, the US, and India. Each of us has a passion for diversity in the space sector, and it is great to have a team from so many different disciplines each bringing their own ideas to the conference."

The goals of the conference are to spark a passion within delegates; to teach attendees the importance of mentors and to create a network of accomplished space professionals and students. It will feature keynotes and workshops and is being supported by the University of Edinburgh's student experience grant, as well as Edinburgh space services company Astrosat. ROOM Space Journal is the official media sponsor. It's aimed at students and recent graduates and is focused on women and gender minorities; however all are welcome and Christina hopes it will attract a varied group.

"Our expected number of attendees, based on the reach of the conference and our pre-registration form, is 500 delegates, but due to the event being virtual, we are able to reach many more individuals than an in-person event," she said.

"Ultimately, the goal is to reach people who may not have initially considered a career in space, as well as to encourage those already passionate about it. We aim to demonstrate that there is much more to the space sector than astronauts or physicists.

> **I wanted to put Scotland on the world stage in terms of attracting diverse talent to the space sector**

The idea that we are bringing together individuals from around the world while promoting the growth and development of the space sector in the UK is really exciting to me. We have so many remarkable speakers from a wide range of industries, and that in itself is incredible. Being able to communicate with them, and the fact that they are so enthusiastic about our event, is wonderful to see. I still pinch myself every once in a while, when I end up contacting people I look up to!" ■

edinburghwomeninspace.com



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