



# Data Skills Gateway Joined Up for Jobs Forum August 30<sup>th</sup> 2023







"We are now entering an era when the generation, collection, analysis and monetisation of huge volumes of data underpins the Digital Economy.

The value of data comes from use in real-time, or aggregation over long periods, to understand and predict behaviour.

Whilst data has become ubiquitous, the challenges for all organisations are effectively to use this data to shape, develop and deliver innovative processes (including new digital products and services) to consumers and citizens.

This is what we call **Data Driven Innovation** (DDI)." **Jon Oberlander**





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**Data-Driven  
Innovation**



**Why Edinburgh?**



THE UNIVERSITY  
*of* EDINBURGH



**Data Skills  
Gateway**





## AI in Edinburgh turns 60

The roots of Artificial Intelligence in Edinburgh go back to 1963, to the Experimental Programming Unit led by Donald Michie, who had worked with Alan Turing at Bletchley Park.



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Edinburgh has become the **fastest growing digital hub in the UK** during the past decade, outperforming all nations and regions in digital sector employment growth (8.2% p.a.)  
(DCMS, 2021)



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# Leading Digital cluster

2006



2016



2022





**Data-Driven Innovation (DDI):**  
15-year, £661m investment and  
innovation initiative supported by a total  
of £270m capital funding from the UK  
and Scottish Governments.

lets become the  
**data capital of  
europa**

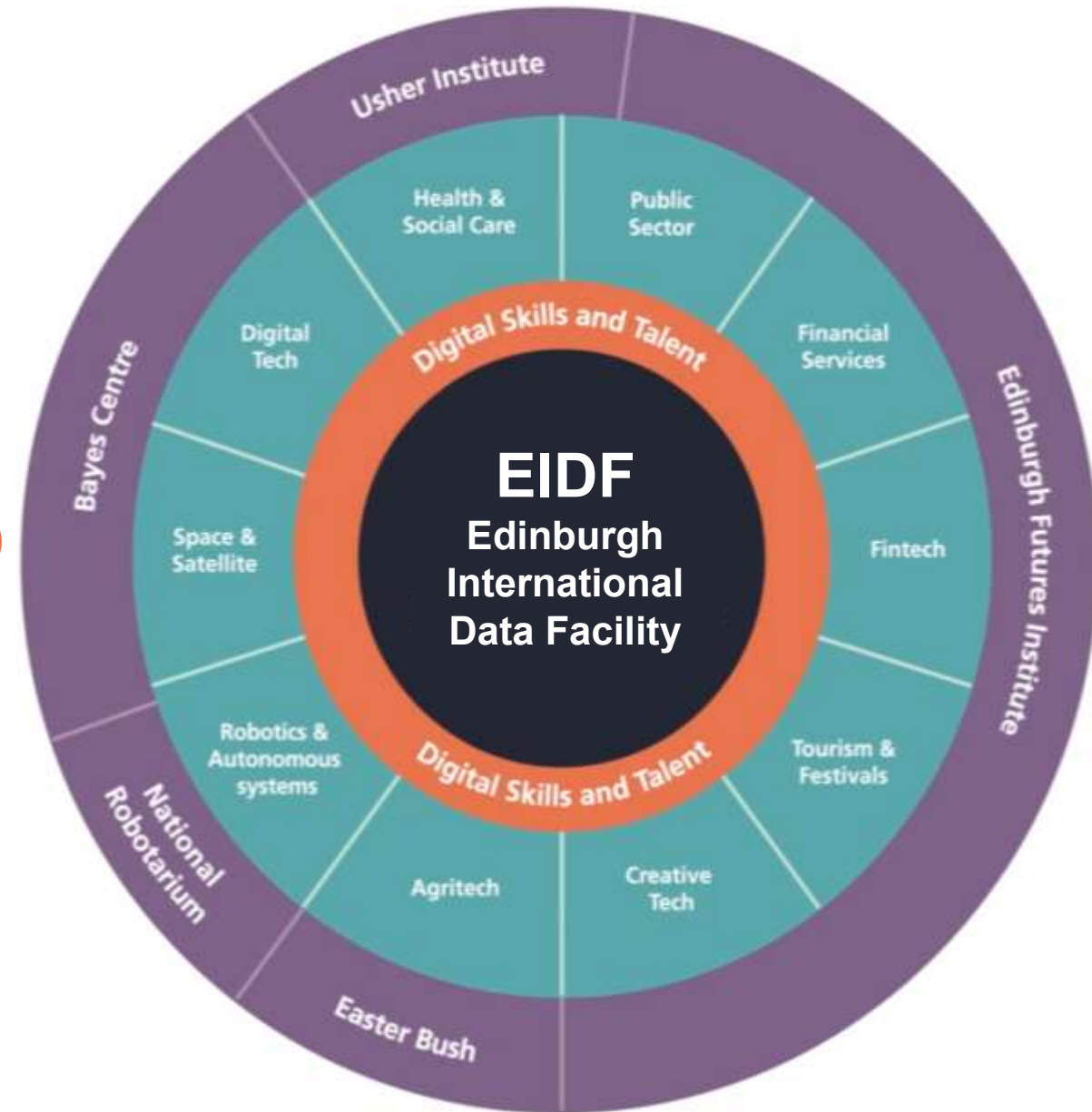


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**6 DDI Hubs – One Innovation Platform:**  
53,000 sqm of new space for  
researchers, students and partners to  
collaborate – challenge, create, change.



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Data-Driven  
Innovation





**Bayes Centre: opened 09 / 2018**





**National Robotarium: opened 07 / 2022**





**Edinburgh Future Institute : ready autumn 2023**





**Easter Bush Innovation Centre: upgraded 2024**





**Usher Institute: ready autumn 2023**

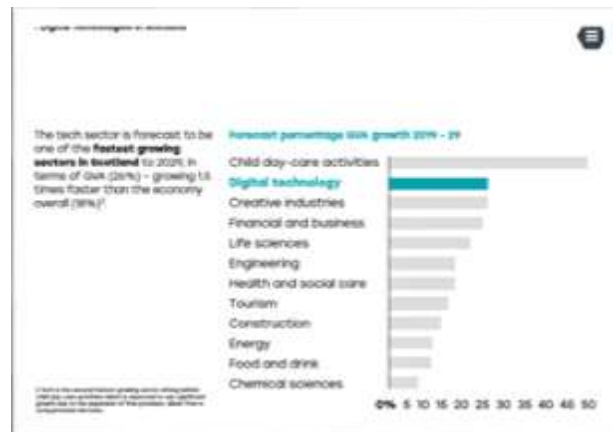




**EIDF Computer room: opened 02 / 2022**



# Programme developed in response to demand for Data Skills nationally and locally

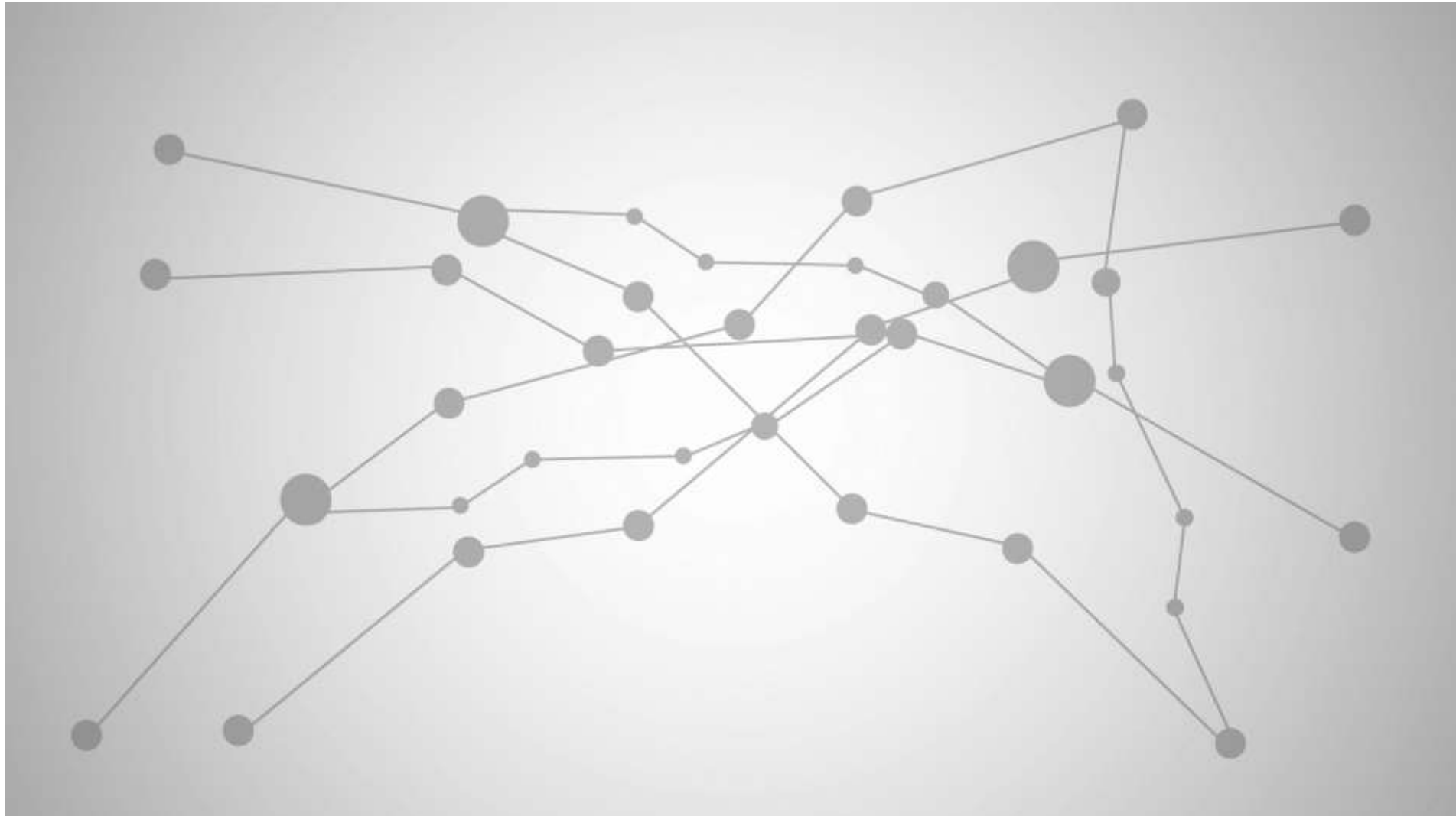




# Promotional film

DDI Skills Gateway

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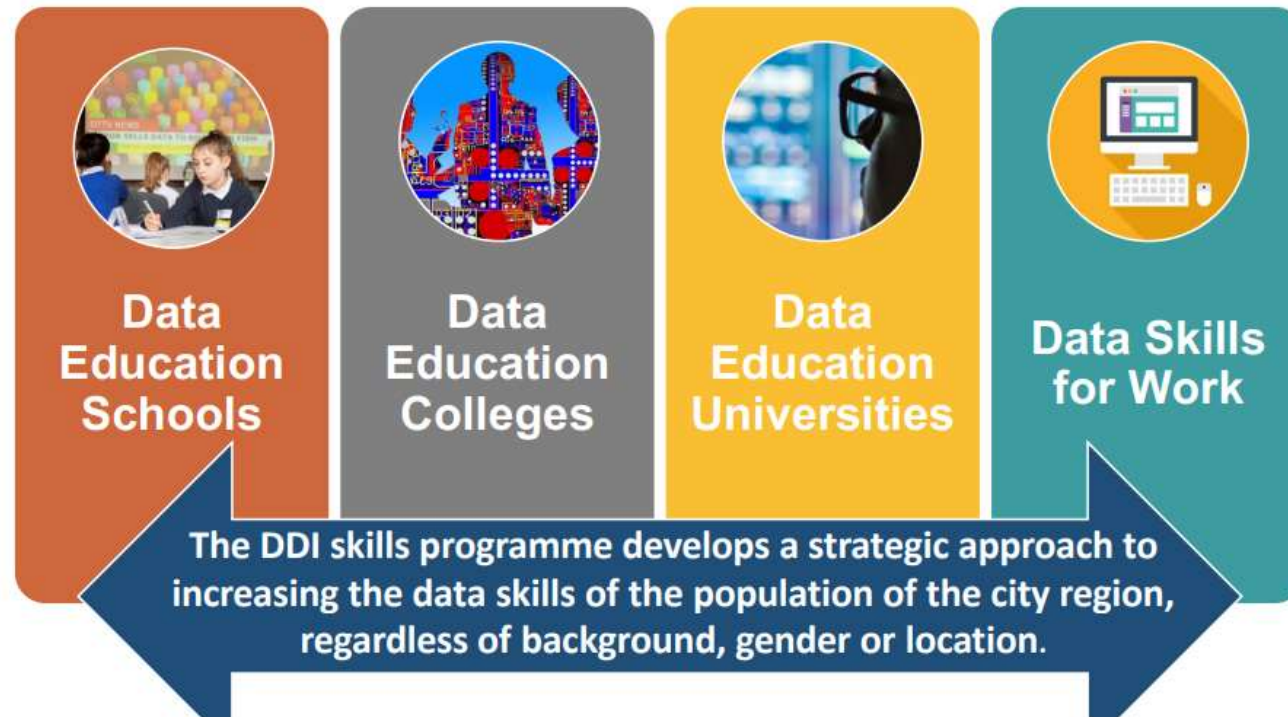




# Partnership model...

## DDI Skills Gateway

... across skills pipeline





# Demonstrating our reach



Skills improvements  
**73578**  
Goal: 60000 (+22.63%)

Job outcomes  
**2080**  
Goal: 1200 (+73.33%)

Career progression  
**30**  
Goal: 160 (-81.25%)

No. of participants by workstream

DDI Data Education in Colleges	4538
DDI Data Education in Schools	65277
DDI Data Education in Universities	3612
DDI Data Skills for Work	699
<b>Total</b>	<b>74126</b>

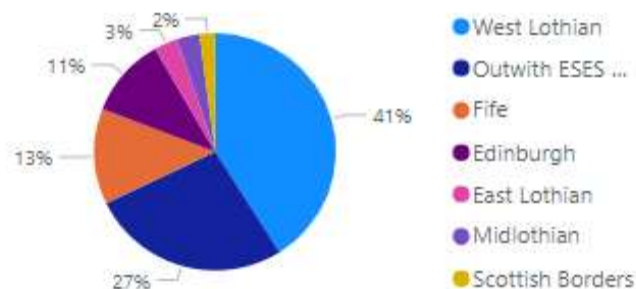
An additional  
**36,900**  
learners with new knowledge from teacher education



Participants by provider type



Participants by local authority



Earning below £24k  
**73**  
Women returner  
**72**

Retained employment  
**12...**  
BAME  
**12...**

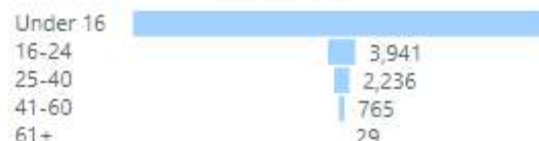
At risk of redundancy  
**202**  
Disability  
**2647**

Carer  
**20...**

Care experienced  
**20...**

Underemployed  
**203**

Age range



Provision type

Provision type	Total participants
DDI BSC (HONS) Data Science SCQF Level 10 QMU	115
DDI BSC (HONS) Data Science SCQF Level 10 ENU	9
DDI Data Education in Colleges Professional Development	856
DDI Data Education in Schools Face-to-face learner event	3030
DDI Data Education in Schools Online learner event	60635
DDI Data Education in Schools Professional Development	227
DDI Data Education in Schools Resource download	1385
DDI Data Skills for Work: Employer fund	55
DDI Data Skills for Work: Employer fund (Leveraged)	11
DDI Data Skills for Work: Individual fund	164
DDI Data Skills for Work: Provider fund	278
DDI Data Skills for Work: Provider fund (Leveraged)	169
DDI Data Skills for Work: Short course (Inclusive)	22
DDI Internship: Registered Client	548
DDI Module University - SCQF Level 10 ENU	90
DDI Module University - SCQF Level 10 QMU	84
DDI Module University - SCQF Level 7 ENU	1320
DDI Module University - SCQF Level 8 ENU	1071
DDI Module University - SCQF Level 9 ENU	375
DDI NPA Data Science - SCQF Level 4	337
DDI NPA Data Science - SCQF Level 5	293
DDI PDA Data Science - SCQF Level 7	77
DDI Skills Module - SCQF Level 3	63
DDI Skills Module - SCQF Level 4	711
DDI Skills Module - SCQF Level 5	1051
DDI Skills Module - SCQF Level 6	278
DDI Skills Module - SCQF Level 7	514
DDI Skills Module - SCQF Level 8	145
<b>Total</b>	<b>74126</b>

Skills improvements by Target group





# Data Skills for Work

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[About Us](#)[News](#)[Programmes](#)[Learning](#)[Community](#)[Resources](#)

**Addressing the digital skills  
gap, supporting diversity, and  
preparing for the changing  
world of work**

Part of the Data Skills Gateway, delivered by The Data Lab



**Data Skills  
Gateway**

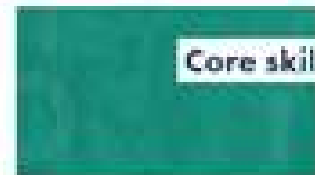


# Data Skills for Work



Data literacy levels

## Themes for skills/competencies



The focus is on identifying data sources and understanding of data and how it is used in real-world situations.



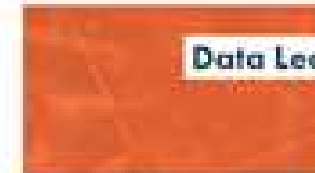
The focus is on managing data, including data requirements, ethics and rights.



The focus is on the design, development and maintenance of data systems.



The focus is on interpreting and analysing data and patterns.



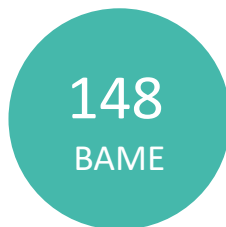
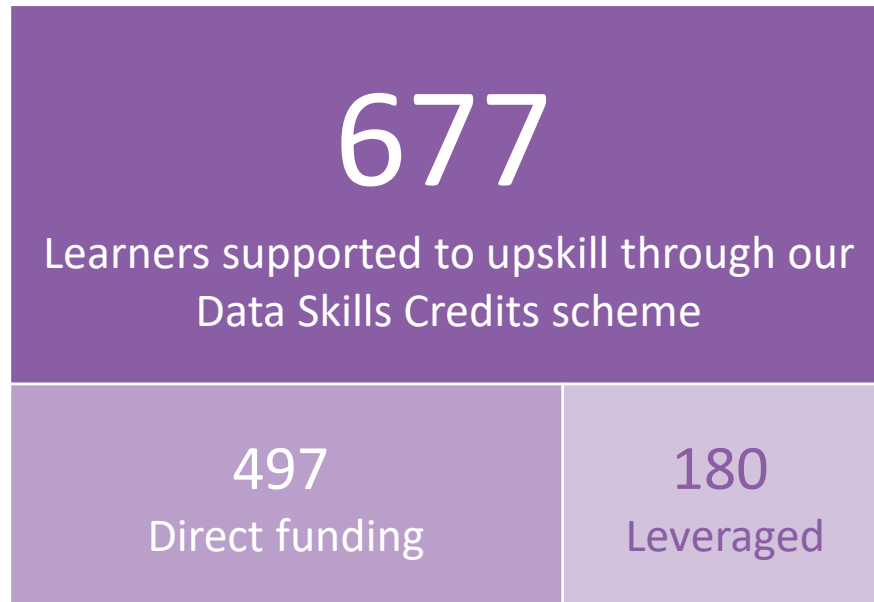
The focus is on leadership skills - helping teams to improve their understanding of data, strategy and make the most of data within their organisation.



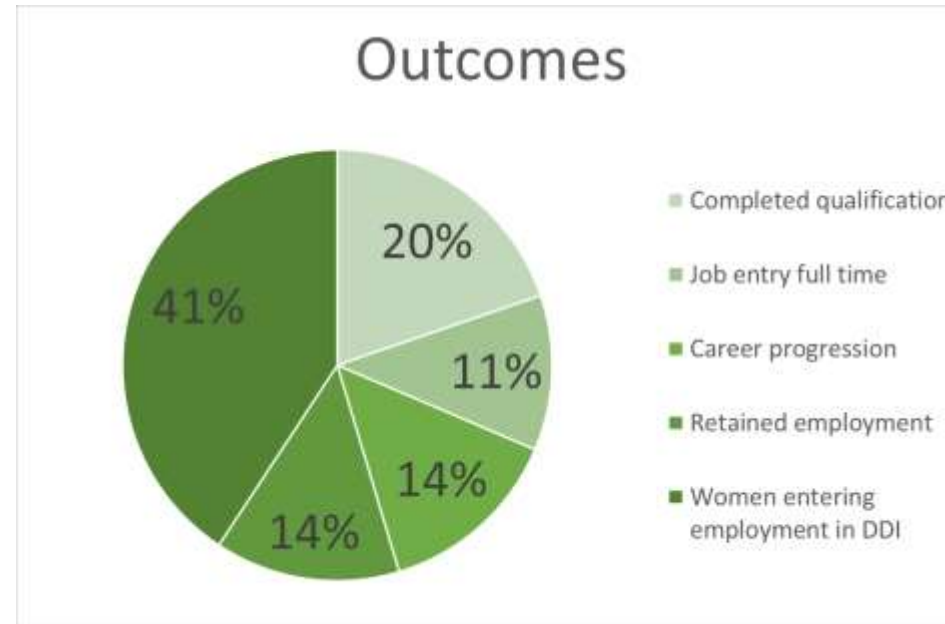
The focus is on business skills - building data-driven business models, knowledge in product or communication, service design, planning and delivery.



# Data Skills for Work



Data Skills Credits



Sample size = 86

*"Data Skills for Work have helped us tremendously by increasing the number of women taking part in our courses and allowing us to deliver courses open learning in a way that is affordable and flexible to learners from underrepresented groups. It's allowed us to help people develop their career and multiple examples of people getting really good jobs."*

**Sam Blyth - Head of School, School of Computing & Technology, Edinburgh College**



# Data Skills for Work

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## Data Skills Credits – Provider Fund Calls 2023

Funding for providers offering data skills courses to learners in ESESCRD and now expanded to Tay Cities Region

- Launched Provider Funding calls for Edinburgh City and Tay Cities Region to support a target of **224** learners in 23/24.
- Applications totalled £284k and £110k to award.
- Offers have been made to fund **20 courses** (11 in ESES and 9 in Tay Cities)





# Let Data Drive You

Future proof your  
CV with data  
science skills.

[Learn more](#)



**Data  
Education  
in Colleges**



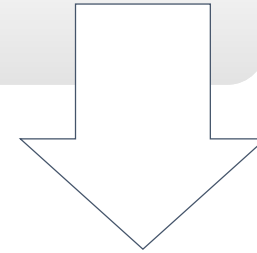




# SQA Data Science Curriculum Portfolio

**NPA Data Science**

SCQF Levels 4, 5, 6



**PDA Data Science**

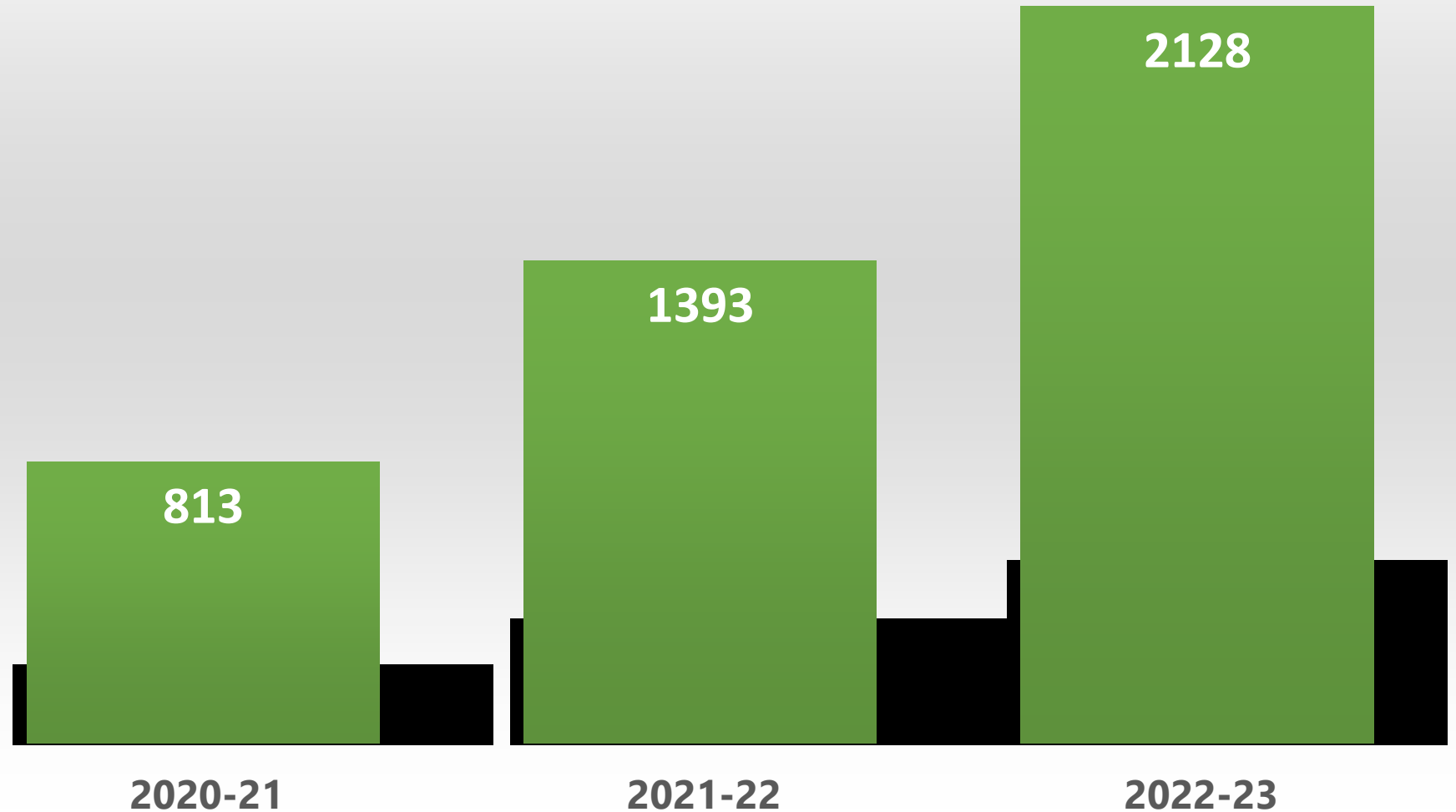
SCQF Levels 7 and 8







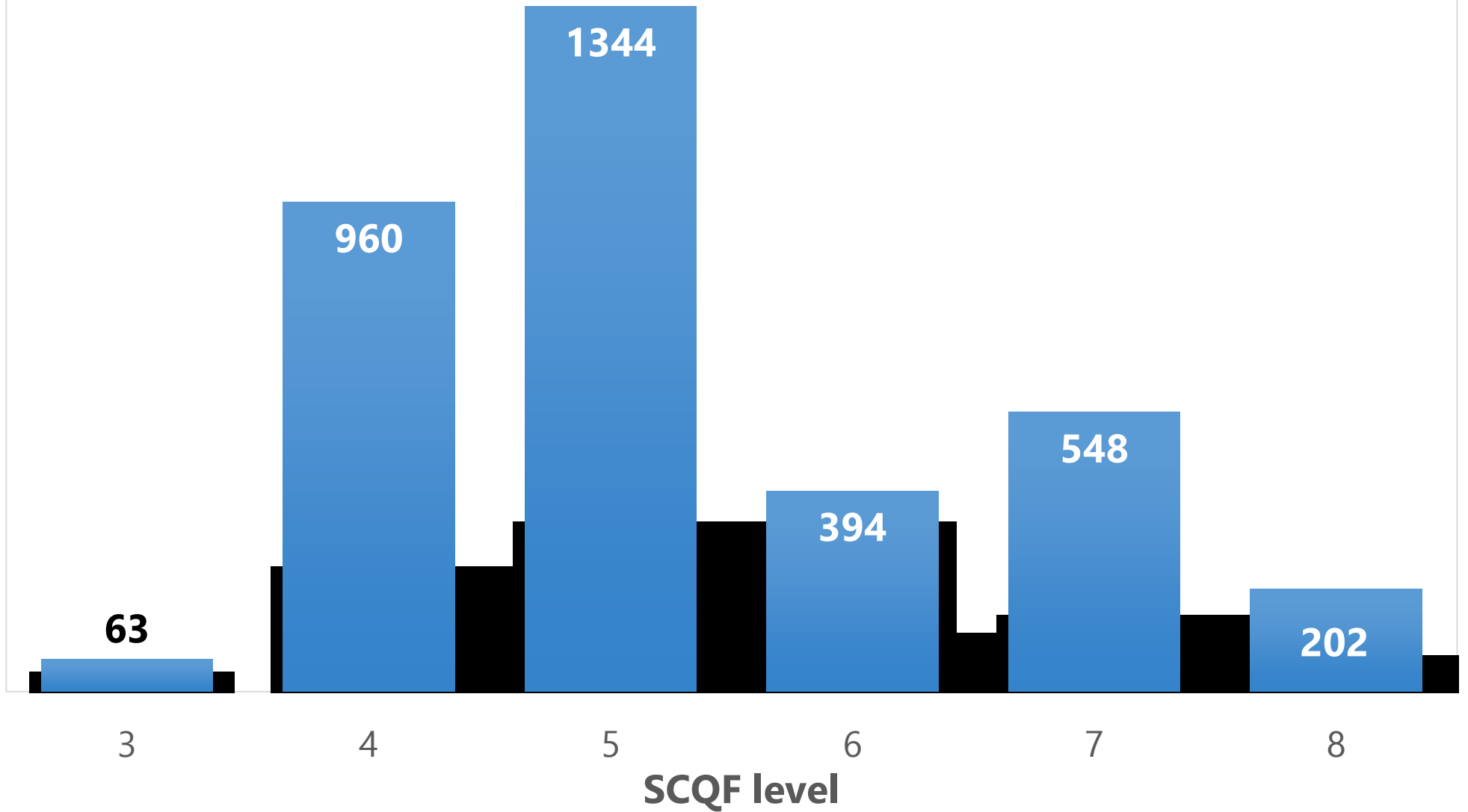
## Data Education in Colleges - Learner Engagement 2020 - 2023








## Learners - SCQF level 3 -8





# Working in partnership with Third Sector



The screenshot shows the 'Access to Industry' website. The top navigation bar includes 'Services For Young People', 'Services For Adults', and 'Courses'. A search bar is also present. The main header features a blue background with a white 'Courses' button. Below this, the breadcrumb trail reads 'Home > Courses and Groups > Introduction to Digital and Data Skills'. The course title 'Introduction to Digital and Data Skills' is prominently displayed. A 'What' section follows, with a note that 'APPLICATIONS ARE NOW CLOSED'. The course description states its purpose is to help learners gain essential digital and data skills. A 'Get in touch' button is located at the bottom right of the course details.

ACCESS TO INDUSTRY

Services For Young People Services For Adults Courses

Courses

Home > Courses and Groups > Introduction to Digital and Data Skills

## Introduction to Digital and Data Skills

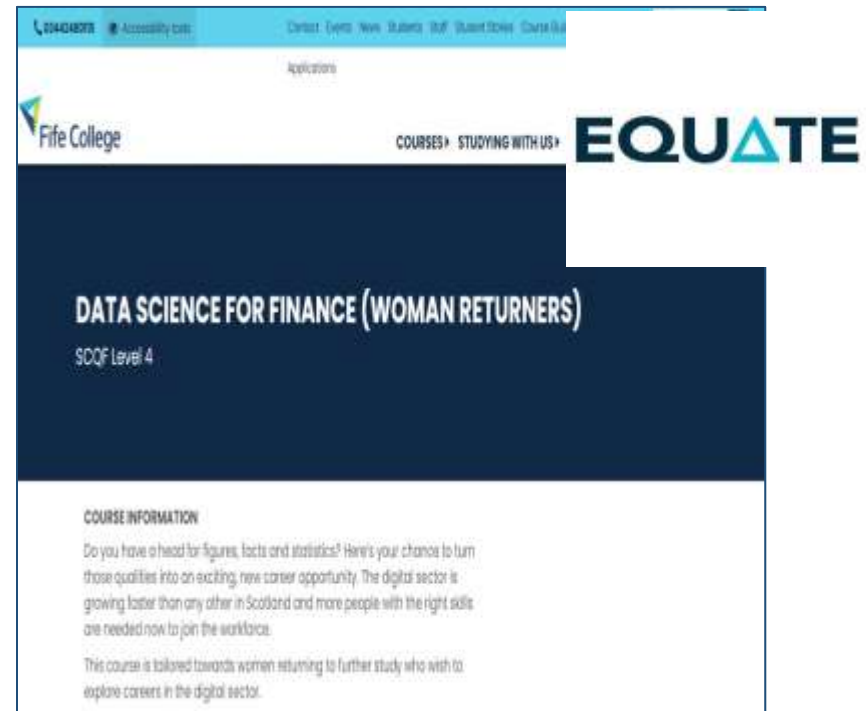
What

**\*\*APPLICATIONS ARE NOW CLOSED\*\***

The purpose of the course is to help learners to gain and develop essential digital and data skills by using a range of digital devices, software applications and tools safely and securely. Nowadays these core IT and data skills are crucial for further learning, life and work. The course also encourages learners to develop self-management skills, social intelligence and innovation. It is suitable for all learners. The course will be delivered by an Edinburgh College lecturer.

To apply, please complete the application form provided below (click on the link to download), and return it to [Magda.Gucman@accesstoindustry.co.uk](mailto:Magda.Gucman@accesstoindustry.co.uk) or call Magda Gucman on 07809 555 709 to apply by phone.

Looking to gain essential skills for life and work?  
Sign up for our newest course:  
**INTRODUCTION TO DIGITAL & DATA SKILLS**  
Get in touch



The screenshot shows the Fife College website. The top navigation bar includes 'Contact', 'Events', 'News', 'Students', 'Staff', 'Student Services', and 'Course Guide'. The main header features the Fife College logo and the 'EQUATE' logo. The course title 'DATA SCIENCE FOR FINANCE (WOMAN RETURNERS)' is prominently displayed, along with 'SCQF Level 4'. A 'COURSE INFORMATION' section follows, describing the course's focus on digital skills and its suitability for women returning to the workforce.

01463 483718 Accessibility tools Contact Events News Students Staff Student Services Course Guide

Applications

Fife College

COURSES > STUDYING WITH US > **EQUATE**

## DATA SCIENCE FOR FINANCE (WOMAN RETURNERS)

SCQF Level 4

**COURSE INFORMATION**

Do you have a head for figures, facts and statistics? Here's your chance to turn those qualities into an exciting, new career opportunity. The digital sector is growing faster than any other in Scotland and more people with the right skills are needed now to join the workforce.

This course is tailored towards women returning to further study who wish to explore careers in the digital sector.





# College Community Courses



Edinburgh College working with Access to Industry, East Lothian Works and Midlothian Council to co-deliver a data skills progression route mainly through the National Progression Award (NPA) in Data Science at SCQF level 3-6.

This portfolio of data courses has helped learners to gain confidence in using digital technologies in different educational, social, or vocational environments.

On completion of the programme learners will have recognised digital and data literacies and other essential skills that contribute positively to learning in life and work, as well as their and others' rights and responsibilities as data citizens.

Learners are also progressing to PDA in Data Science (SCQF level 7) at Edinburgh College.





# Professional Learning Programme

Data Education in Colleges Professional Learning Programme moves into its third year.

The DDI funded Professional Learning Programme was introduced in December 2020 to provide an opportunity for all staff, both support and teaching, from across the four colleges to engage in CPD around developing data literacy skills.

Since then, we've run:

- over **34 workshops** which have been attended by 629 staff members from across the four colleges;
- a range of **certificated courses**
- a variety of **curriculum groups** to provide lecturers with the opportunity to share their experiences of delivering Data Science programmes of study.



Fife College



Data Skills  
Gateway



# New courses

Let Data Drive You



## Women in Data and Digital Innovation skills

- PDA in Data Science (Level 7)

## Data Science for Veterans

- NPA in Data Science (Level 6)

## School College Partnership Programme

- NPA in Data Science as part of School College Partnership programme (Level 5 and 6)

## Health and Social Care

- PDA in Technology Enabled Care (Level 7)

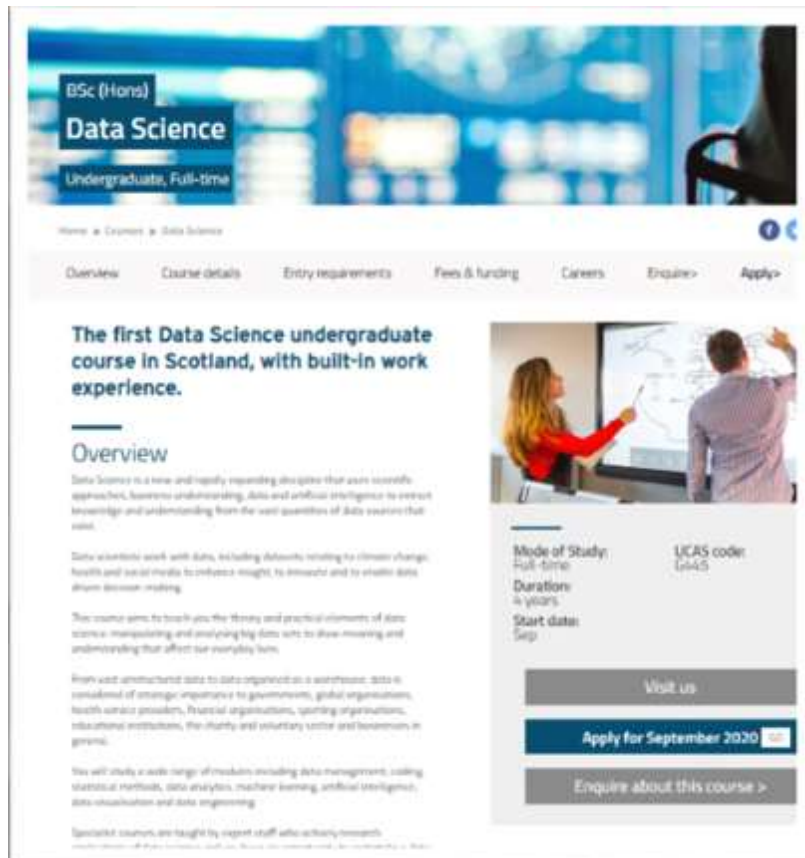
## Bridging course to BSc





# Data Education in Universities

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Two degree courses (for data professionals):

- BSc (Hons) Data Science (first intake 2020)
- BSc (Hons) Computer Science and Artificial Intelligence (first intake planned 2023)

Existing provision:

BSc (Hons) Data Science Graduate Apprenticeship

MSc Data Science

MSc Data Engineering

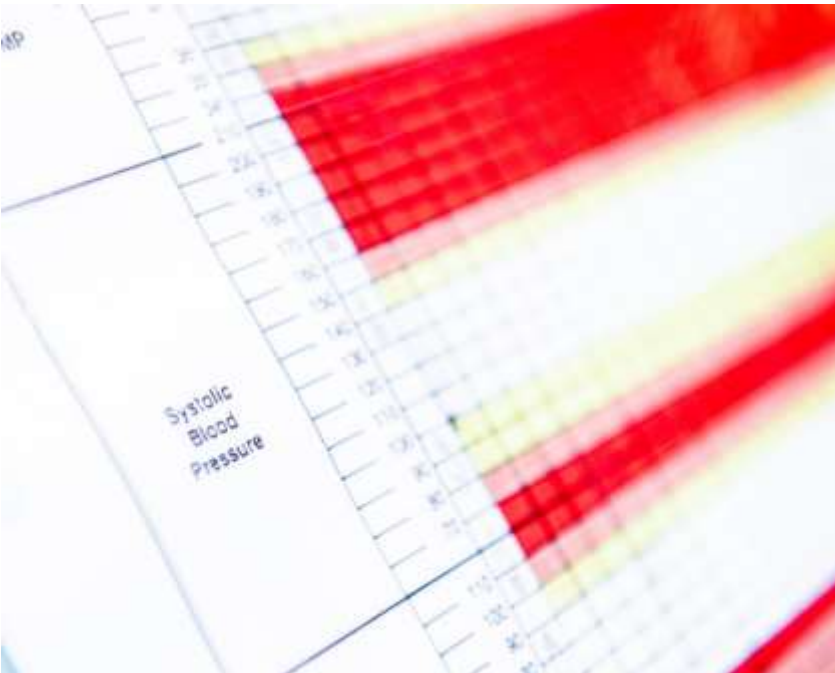


# Data Education in Universities

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- Embedding data skills in degree study – over **3500** students have studied new data modules at Edinburgh Napier & Queen Margaret Universities, on programmes including:
  - BA Nursing
  - BA Business Management





# Data Education in Universities

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CANON MEDICAL SYSTEMS

Summer Intern Programme - 3 Months  
Summer 2023 - Edinburgh/Remote

## About the company

We are looking for students or those in the early stages of their career to join our **Summer Internship Programme 2023** - a 3-month paid Internship between June and September 2023. This is an excellent opportunity to gain relevant work experience through a dynamic, innovative team developing industry-leading medical imaging solutions. We create technology and tools that make a meaningful difference to people's lives; helping doctors to help their patients restore their health and well-being. The work is fast paced and intellectually stimulating.

## About the role

Several positions are available, working within diverse project teams across our R&D division. Topic areas are:

- Student paid placements in data science roles, **117** roles, live adverts for summer 2023
- Research into gendered experiences of work placements underway

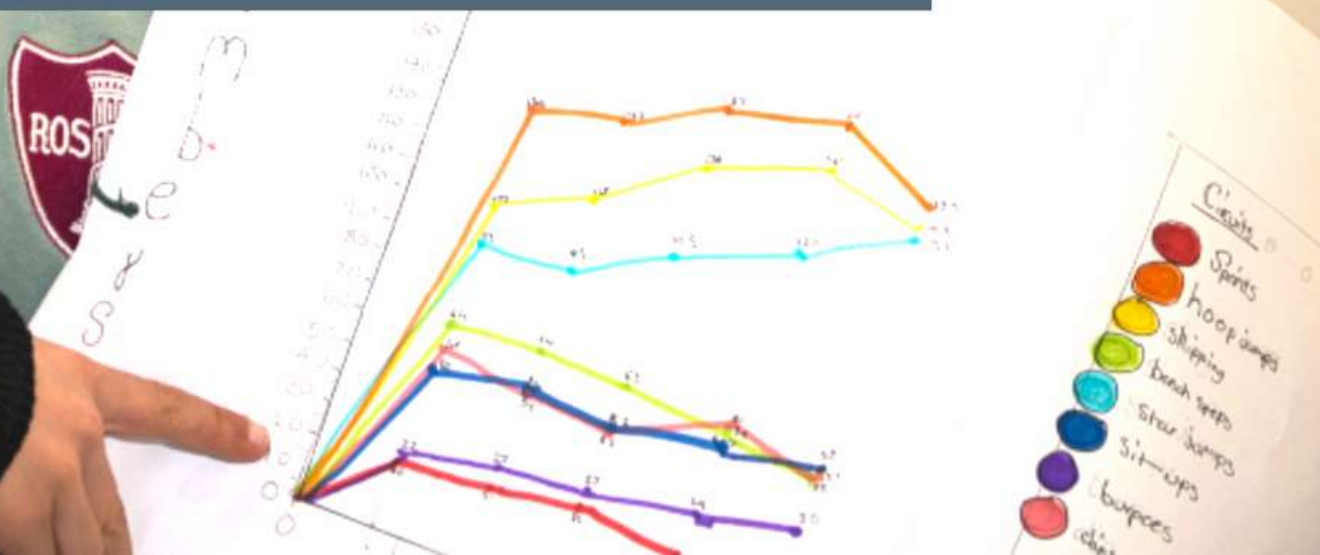




[www.dataschools.education](http://www.dataschools.education)

# Learning with Data

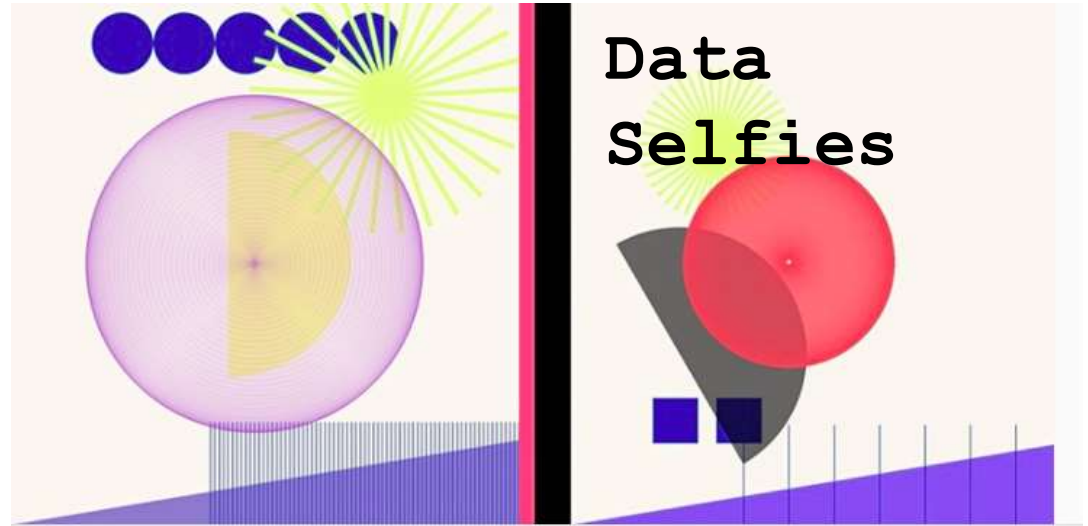
Empowering school learners to succeed in a data driven future





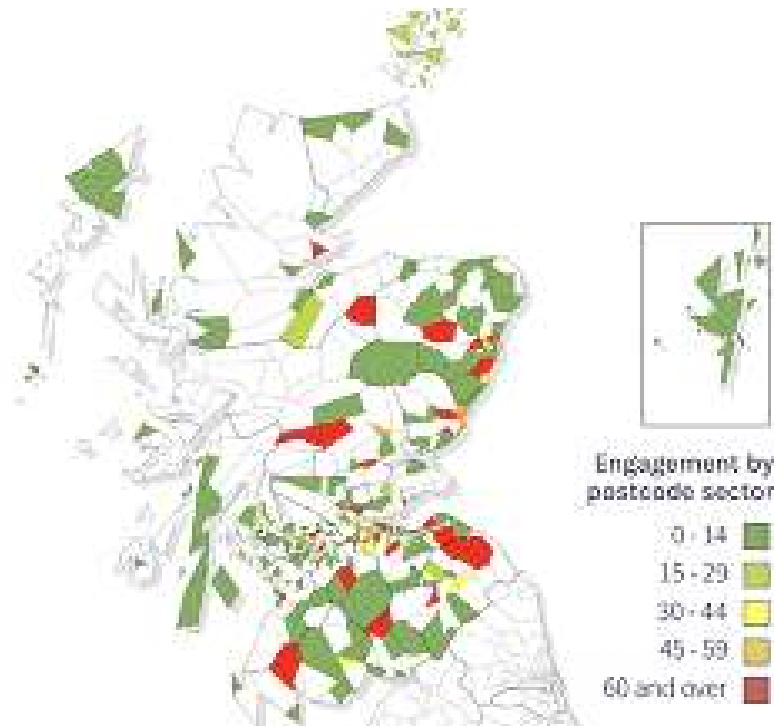
# Data Science – Live Lessons

Pioneering Data Literacy in Schools





Reach – 24,000 participants in over 27 countries  
breakdown by postcode, red being the most frequently engaging  
postcodes





# Data Science

WORK CHECKING

CONNECTED

12.123.82.34 CONNECTED

//SCAN  
▶12.123.82.34

▶82  
CONNECTED

12.123.82.34

## Educators' Guide to the National Progression Award



# National Progression Award in Data Science

## What is an NPA?

A National Progression Award is designed to provide learners with the knowledge and skills needed to progress to further learning or employment. NPAs focus on specific areas such as cyber security, computer programming and data science. NPAs are small, highly focussed, nationally recognised qualifications that deliver real-world skills.

## What is the size of the qualification?

At Level 4 (National 4) the qualification will take 80 hours to deliver. At Level 5 (National 5) and Level 6 (Higher) the qualification will take 120 hours to deliver.

## What is included in the qualification?

- Data skills
- Data analysis
- Computer programming
- Statistics
- Data citizenship
- Data ethics

## What will learners get from the NPA?

There is a shortage of trained data scientists. Data skills are also important at university and in everyday life. Learners will find out what data science is used for, the principles behind it, and gain practical skills in analysing large datasets. They will be able to apply these skills in their personal lives, at university and in employment.

*The NPAs in Data Science at SCQF levels 4, 5 and 6 provide foundation knowledge and skills in data science to increase awareness of the discipline among learners and provide practical skills in data analysis*

## Why is data science important?

You might have heard about "the data economy" or "data driven innovation". Data skills are to the 21st Century what reading and writing were to the Twentieth. The coronavirus pandemic has shown us how important data skills are for communities. Data science is used in numerous fields from health care to astronomy. Just about every under-graduate course at university involves data analysis. Almost every job requires data skills, as such the UK needs more data scientists!

## Who is the NPA for?

Everyone! Every learner will benefit from acquiring data skills, and every teacher can deliver the qualification. Data science is particularly important in the computing and physical sciences but it's also important in other subject areas such as Mathematics, Modern Studies and Geography.

## Support Material

A range of support materials are available for teachers and learners. There's a Learner's Guide, which covers the contents of most of the qualification, and an Educator's Guide to help teachers prepare for and deliver the qualification. There's also a range of assessments for most of the units within the qualification.

**For more information and resources visit:**  
[teachdata.science](http://teachdata.science)



**Data Education in Schools**  
[www.dataeducation.org.uk](http://www.dataeducation.org.uk)

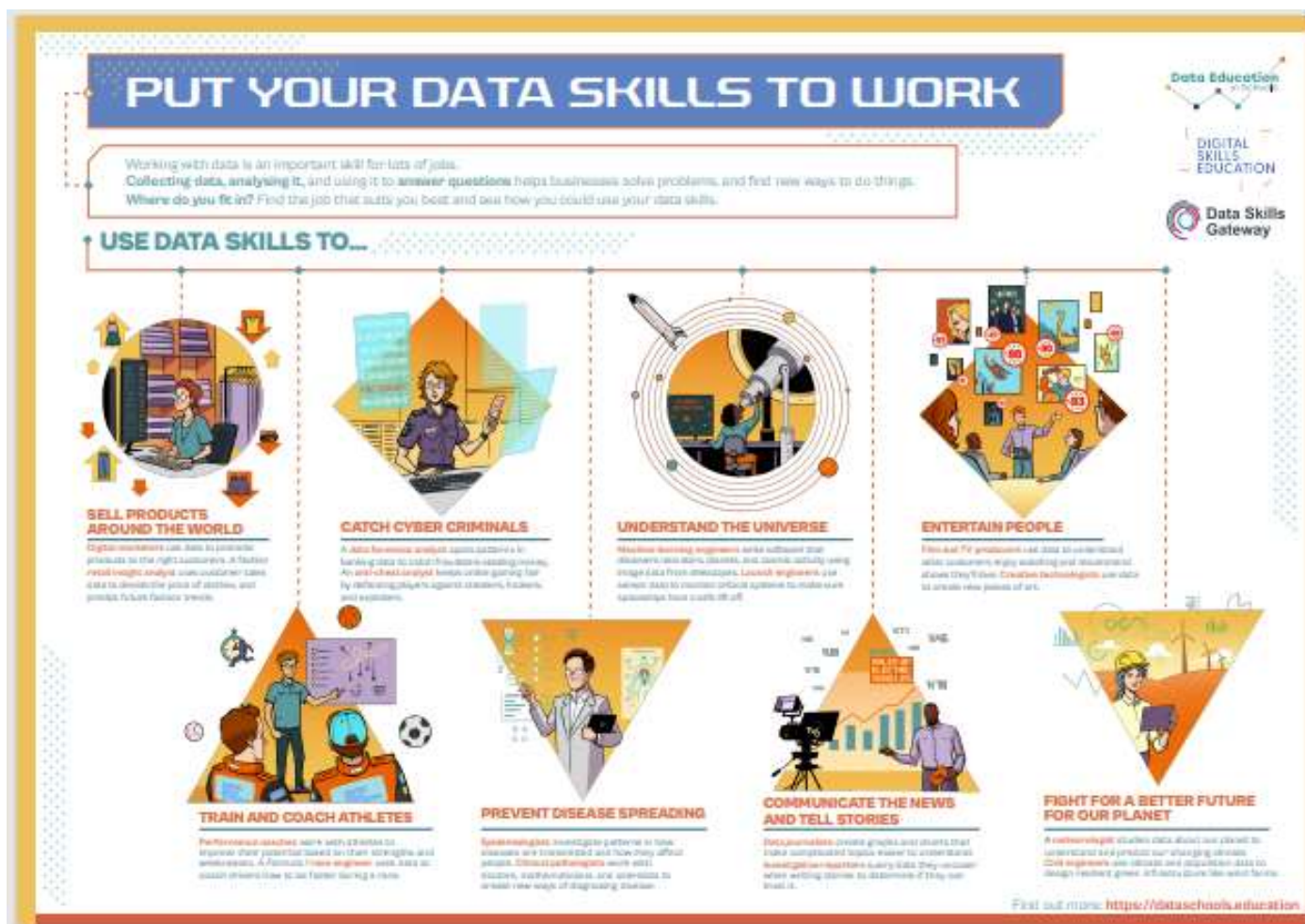


**Data Skills Gateway**

## Pioneering Data Literacy in Schools



# Routes to qualifications and careers shared with region's secondary schools





# Supporting Teachers

Taster sessions – facilitated – Day of Data

Student/ DES led sessions – Microbits on the Move

Professional Learning Sessions – in school





## Data Literacy for Primary Teachers

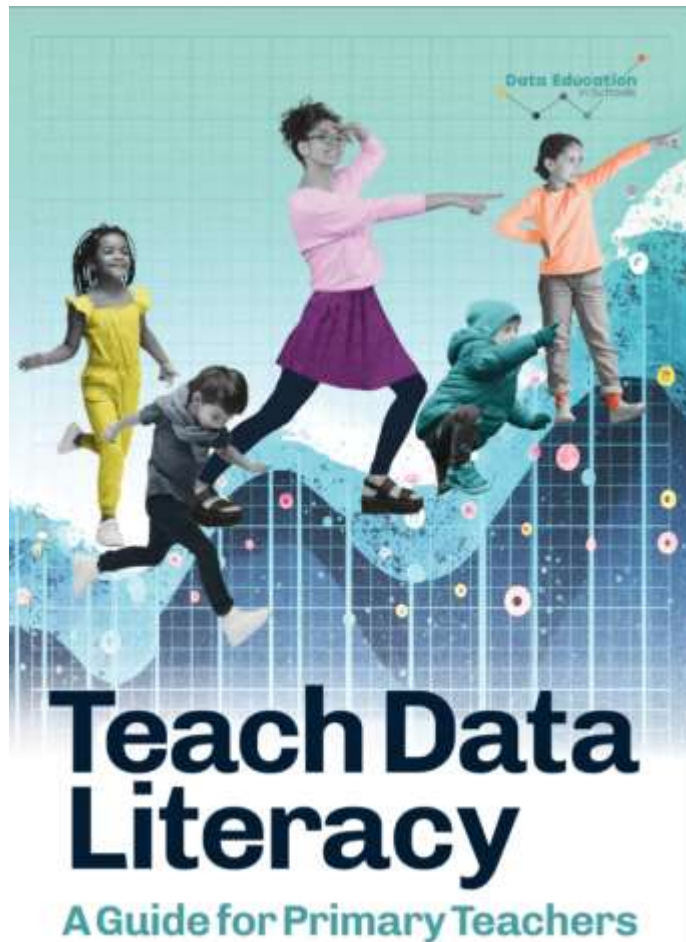


## Data Science in the Secondary Classroom





# Teach Data Guide for Primary Teachers



Resources and Activities: First Level 48



**Problem**  
**Ladybird count**

The learners are shown pictures of cards with ladybirds on them, and encouraged to think about what investigative questions using 'What do you notice?' and 'What questions would you like to ask?' prompts. Suitable for younger learners, but could be adapted for older learners by including different graphs.

**SKILLS & CONCEPTS**  
Ask an interesting question; create a data display.

**NRich Maths**  
<https://nrich.msu.org/106404>





**Plan**  
**Open or Closed**

A quick worksheet-style exercise about the difference between open and closed survey questions.

**SKILLS & CONCEPTS**  
Conduct investigations using the statistical enquiry cycle: posing and answering questions; gathering, sorting, and displaying category and whole number data; communicating findings based on the data.

**NZ Maths**  
<https://nzmaths.org/201706-4>





**Data**  
**Make a Guess Who Game**

Learners will probably be used to playing the Guess who game - in this activity, they get to make their own version of the game. In doing so, they learn about categorical variables (for example hair colour, eye colour of the game characters).

**SKILLS & CONCEPTS**

- Exploring variability in categorical variables
- Structuring information

**Data Education in Schools**  
<https://nzmaths.org/106404>



Resources and Activities: First Level 48



**Data Literacy Concepts**

"The biggest needs for every statistician come from the pursuit of a single truth. It's a quest for the mythical 'one true thing' and needs for conceptual understanding."

Statistics literacy involves understanding the way in which data are collected, analysed, and presented. It is a process of making sense of the world through data. It is a process of making sense of the world through data. It is a process of making sense of the world through data.

**“Learners should explore three main statistical concepts at primary school: data types, variability and probability.”**



**Data Types and Variables**

A dataset is a collection of measurements or records about a group of related items or people. A weather dataset might consist of a collection of temperature recordings from cities in the UK, and an election poll is a dataset of a group of people's votes at the polls.

In statistics, a variable is a characteristic of an individual that you measure, record, and analyse. For all of the items in a dataset, a variable is an attribute that describes a person, place, thing, or idea. The value of the variable will be different for different items in the dataset. For example, if the variable is 'age', it will be different for different people.

There are two main types of variables: categorical and numerical. Categorical variables are variables that can be divided into groups. Numerical variables are variables that can be measured on a scale. There are two main types of numerical variables: discrete and continuous. Discrete variables are variables that can only take on certain values. Continuous variables are variables that can take on any value within a range.

**“There are two main types of variables which learners will encounter in primary schools: numerical and categorical.”**



# Gender and Hard to Reach Communities

- Microbits on the Move – addressing rural / urban divide
- Data for Good – appealing to different interests and subjects





# Boosting Inclusion and Diversity

- Developing a British Sign Language Glossary for Data Science





# BSL

How British Sign Language is changing in Computer Science - 28 March 2022

What if the language you need to do your job simply does not exist?

A team of eight British Sign Language and Tech experts have now created 500 words and phrases to help members of the deaf community access education and jobs in Computer Science. BBC Scotland visited the University of Edinburgh Robotic Labs to look at the positive impact this will have on our future generations.



## British Sign Language Glossaries of Curriculum Terms



### BSL Data Science Glossary - Public data



## Sign language glossary aims to widen tech access

Experts at Edinburgh have helped to produce a sign language glossary for deaf people who are engaged in digital technology.





# Award winning programme



WINNER

Skills Development Award



For the future you want



ScotlandIS CEO, Karen Meechari,  
with Unsung Hero winner, Tommy Lawson



## DDI Skills Gateway



- Exceeded original objectives
- Diversity of offer is enhancing reach
- Pathways are encouraging progression
- Demonstrating the value of a partnership approach
- A model which can be applied to other sectors







## COMING NEXT .....

- Working with AI Alliance to consider impact on skill requirements of advances in AI

