Boosting the uptake of digital courses and careers among A/T level students and university students

The Behavioural Insights Team, 2023

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Contents

1. Exploratory research: facilitators and barriers to the uptake of digital courses and careers

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1.1. Executive summary

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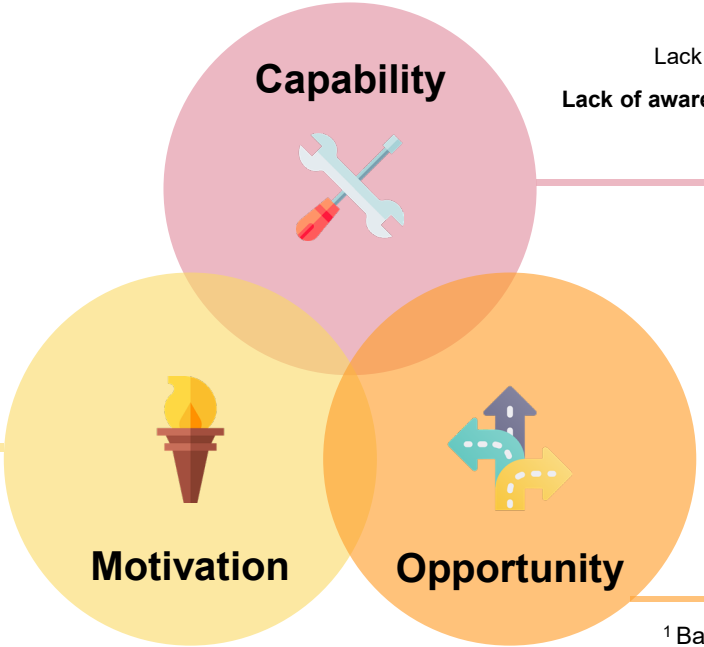
Executive Summary (1 / 4)

1. The UK has a significant digital skills gap. The Department for Culture, Media and Sport (DCMS) has outlined its goal to reduce this gap in the government's agenda for digital skills policy, the UK Digital Strategy.
2. DSIT commissioned the Behavioural Insights Team (BIT) to carry out research into using behavioural insights in communications to boost uptake of technical courses and careers. DSIT are particularly interested in messaging that might appeal to women and girls.
3. This project consists of three phases: exploratory research (1), message generation (2), and message testing (3).
4. This slide-deck reports on the findings from phase one: a pragmatic literature review and nine qualitative interviews with students (A Level choosers, Higher Education choosers and Career choosers) to explore the facilitators and barriers to the uptake of digital courses and careers.
5. Based on the findings from this first phase of work, we have identified six implications for message generation in phase two. These are summarised on slides 6 and 7.

Executive Summary (2 / 4)

Barriers to the uptake of digital courses and careers[1]



Lack of knowledge about the options

Lack of awareness of courses' utility/value

Low 'science capital'

'Too difficult'

'Not for people like me'

Perceiving it as not social or pro-social

Perceiving it as boring and not creative

Prioritising other options

Restricted options

Lack of encouragement

Low teaching quality

Given choice too early

[1] Barriers particularly relevant to the gender gap are in **bold**.

*Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science : IS*, *6*, 42.

Executive Summary (3 / 4)
Implications for message generation

1

Highlight the diversity of job roles that involve digital skills, particularly creative roles

Messages should emphasise the wide range of available job roles that utilise digital skills, particularly less technical and more creative roles. This will demonstrate that digital subjects and courses can be useful for a range of careers beyond those stereotypically associated with digital jobs.

2

Present digital job roles as collaborative, social and well-paid

Messages should demonstrate that many digital job roles involve regular teamwork, collaboration and socialising with colleagues. Average salaries should also be advertised as this has been identified as an appealing aspect of digital roles.

3

Advertise digital subjects and courses beyond Computer Science

Messages should advertise the range of digital A Level and T Level subjects and HE courses on offer, particularly creative subjects and courses. They should avoid use of ‘Computer Science’ as a subject/course title as this is not appealing to most students.

Executive Summary (4 / 4)
Implications for message generation

4

Emphasise that digital subjects and job roles can be accessible to and achievable for everyone

Messages should focus on accessibility and inclusivity. They should specifically challenge the stereotypes of digital subjects and job roles being difficult and therefore reserved for academic individuals, as well as gendered perceptions of tech companies and the wider sector.

5

Use the terms ‘digital’, ‘Artificial Intelligence’, and ‘cyber’ with caution

Messages should only include these terms in context and when targeting specific audiences. Understanding of the terms vary across student groups and attitudes towards them are mixed. Avoid use of the term ‘cyber’ as this was viewed negatively.

6

Use the voice of people who have relevant experience and/or are well-known and respected

Messages should be delivered by relatable people with first-hand experience of digital courses or careers. Alternatively, messages should be delivered by individuals who are well-known and respected by the target group, and preferably working in the digital sector.

1.2 Background

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1.1 Context

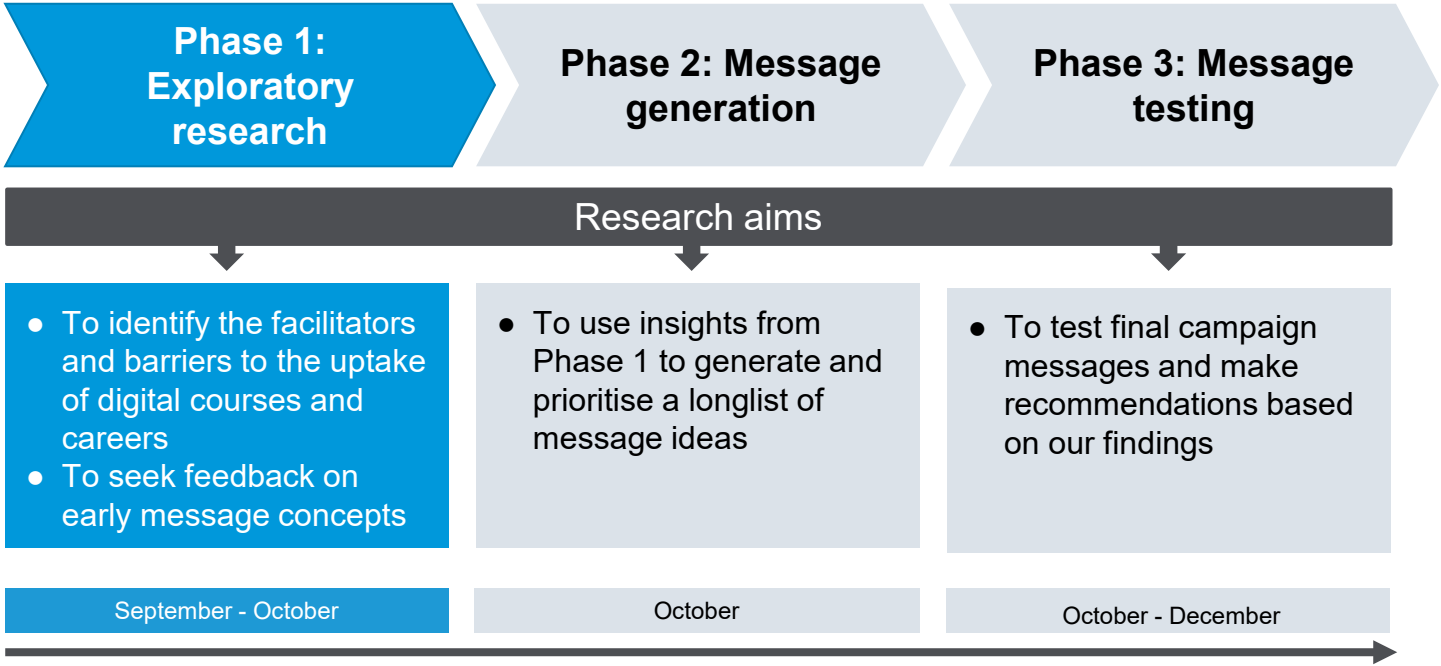
The UK has a significant digital skills gap. This gap is estimated to cost the UK economy £63 billion per year in lost potential gross domestic product (GDP). Under half of UK employers believe that young people are leaving full-time education with sufficiently advanced digital skills.

There is also a great gender imbalance in digital courses and careers. Boys outnumber girls in choosing computer science GCSE four to one, and the proportion of women in tech is only around 17%.

The UK Digital Strategy sets out DSIT's goal to work with education institutions and businesses to deliver the digital skills that the economy needs. As such, DSIT is investing in research and communications to encourage people to take-up technical subjects and careers.

1.2 Project design

DSIT commissioned BIT to carry out research into using behavioural insights in communications to boost uptake of technical courses and careers. The research is split into three consecutive phases:



1.3. Methods

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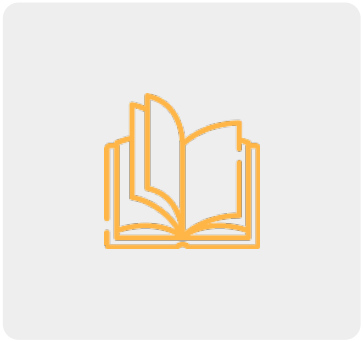
2.1 Rapid literature review



We scanned the existing evidence base relevant to the uptake of digital courses and careers, including gender gaps.

Our approach was pragmatic, rather than systematic, in line with the tight timelines on this project.

We focused particularly on:

1. The problem
2. Barriers to uptake

2.2 Interviews with young people

Nine 30-minute interviews were conducted with three distinct groups of students:

1. Further Education (FE) choosers (aged 15-16)
2. Higher education (HE)* choosers (aged 16-18)
3. Career choosers (aged 18-25)

The interviews explored:

- Participants' decision-making process for subjects/careers
- Participant perceptions of digital subjects/careers
- Early message testing

A breakdown of the participant sample can be found on Slide 14.

**we are aware that some 16-18 year olds will be choosing FE courses, but interviewees in our sample were all choosing HE courses*

2.3 Interview sample

Notes on interpreting the findings

Qualitative interviews can help us understand the *range* and *diversity* of students' experiences, but do not shed light on the prevalence of views or experiences.

Though the literature review identified some gendered trends in attitudes towards digital subjects / careers, our sample is too small to identify any meaningful differences by gender.

Some responses may be subject to *social desirability bias* - the tendency to answer questions in a way that is perceived to be socially desirable (e.g. presenting as more open to digital subjects and careers than they really are) which may differ from actual attitudes.

Sample characteristics		
Gender*	Male	4
	Female	5
Age	15-16 (FE choosers)	3
	16-18 (HE choosers)	3
	18-25 (Career choosers)	3
Location of participants' school or university	North (Inc Yorkshire, NW and NE)	1
	Midlands (inc East, EM and WM)	3
	South (Inc SE,SW and London)	5
	Total in sample:	**9**

**there were a mix of genders in all age or 'chooser' groups*

1.4. Literature review

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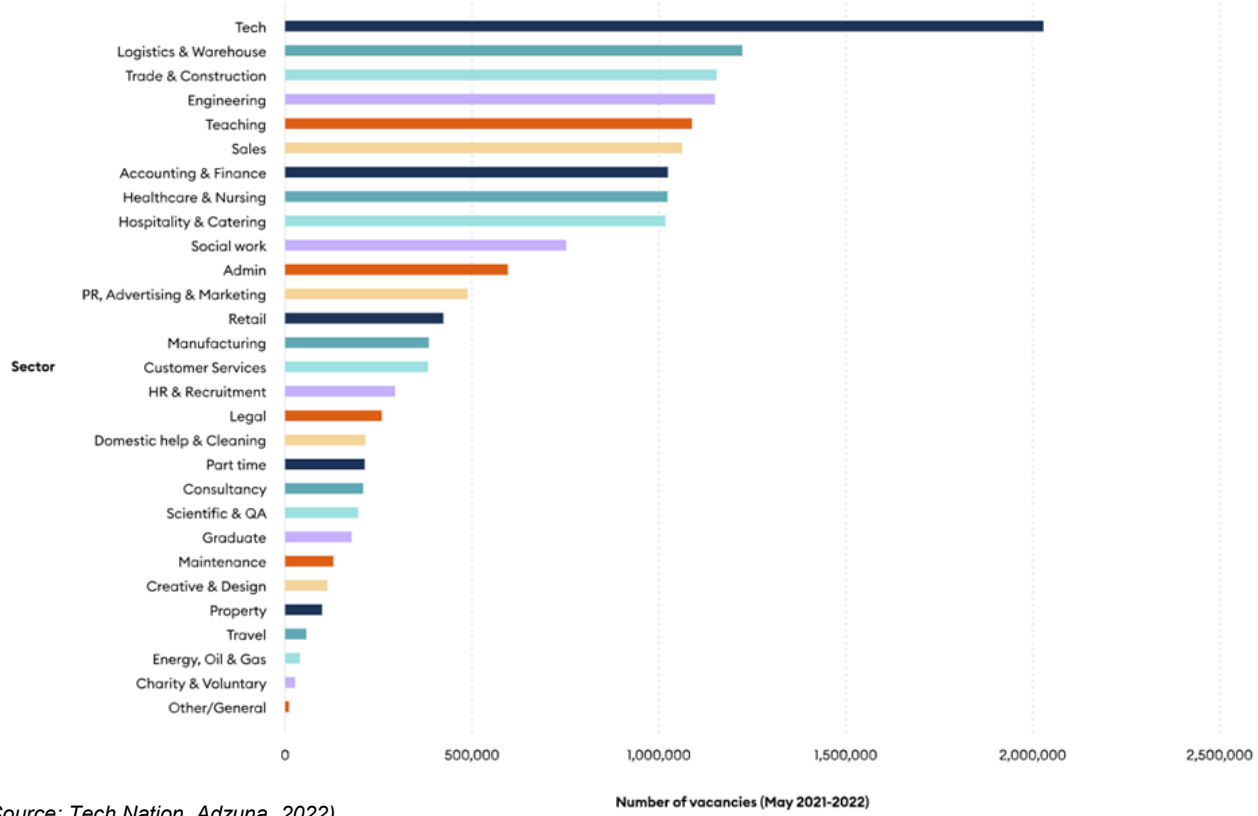
1.4.1 The problem:

There is a digital skills shortage.

We need more people, especially women and girls (who are currently under-represented in the digital workforce), to pursue digital courses and careers.

There are a high number of vacancies in the tech industry, and many businesses believe their reliance on digital skills will increase in the coming years

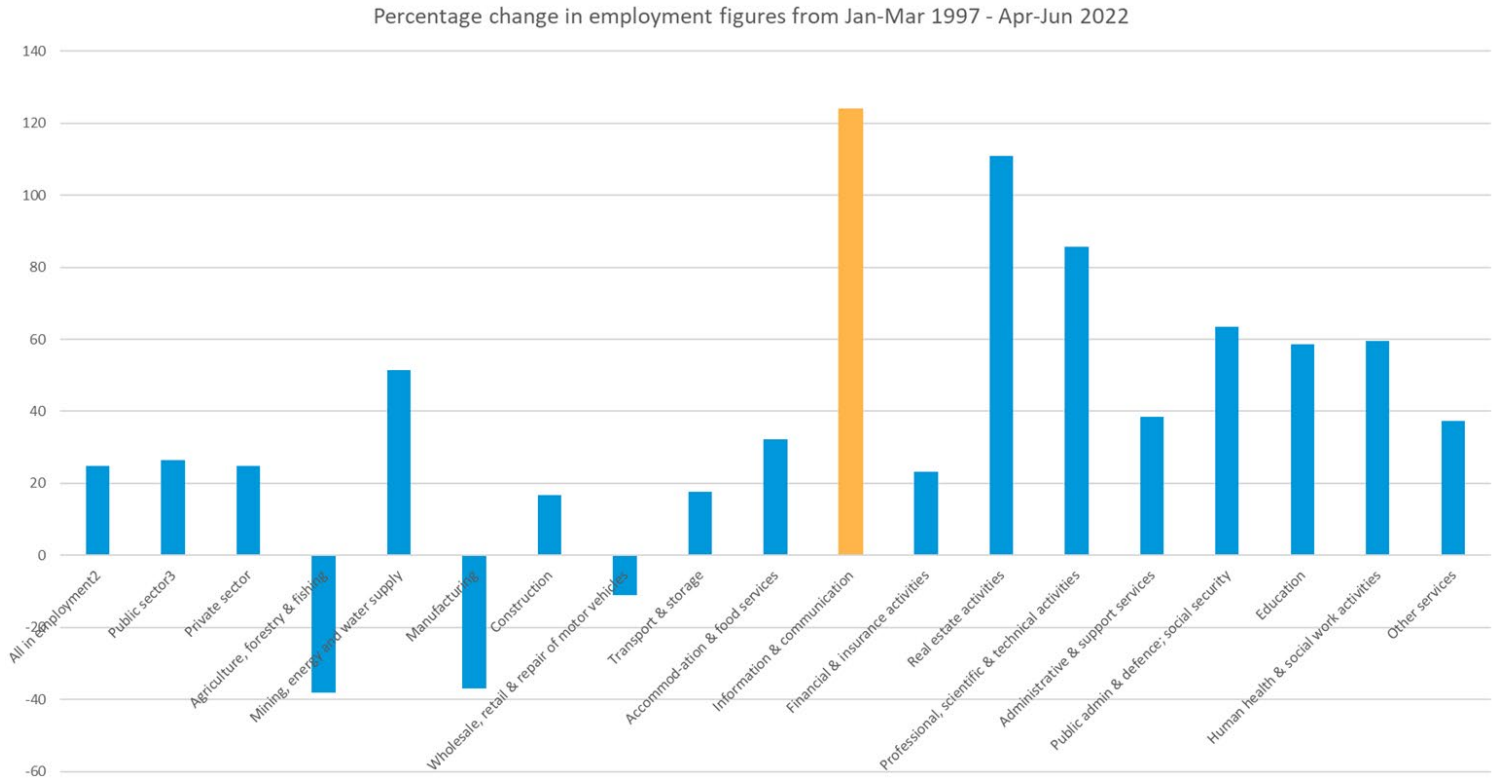


(Source: Tech Nation, Adzuna, 2022)

In a survey of over 1,000 businesses,[1] 60% reported believing their reliance on advanced digital skills is set to increase over the next five years

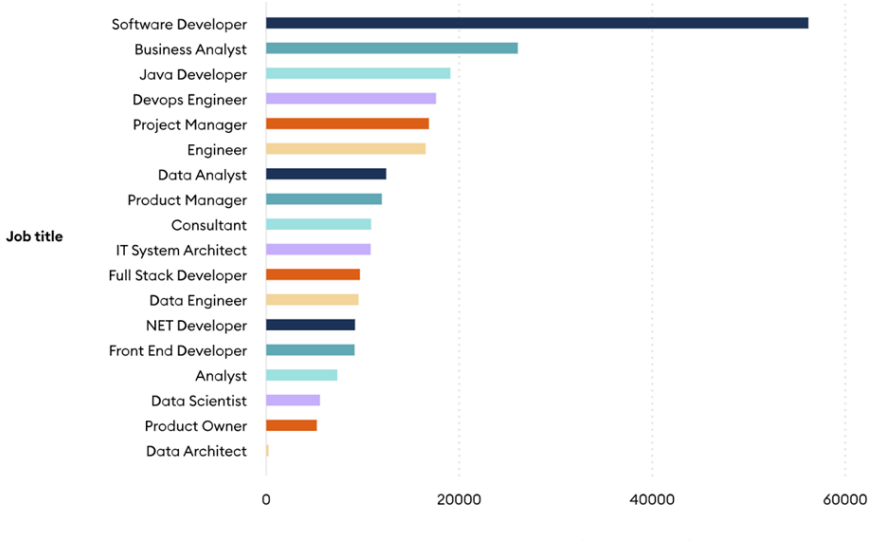
1 WORLD SKILLS UK, Learning and Work Institute & Enginuity (2021) Disconnected? Exploring the digital skills gap

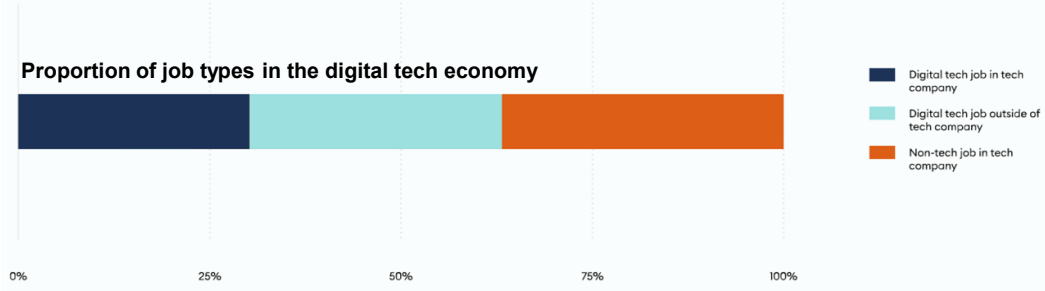
The Information and Communications industry has seen the greatest growth in employment since ONS figures began



(Source: [ONS employment by industry dataset](#))

Software developers are most in demand, but there is also high, and growing, demand for non-tech roles within the digital tech economy





Growth in number of advertised job vacancies by proportion of tech vacancies

	2022 Vacancies	Proportion of job vacancies	2019 vacancies	Growth multiple of no. advertised tech vacancies since 2019
Software Developer	56174	7.99%	36105	1.6
Business Analyst	26067	3.71%	3479	7.5
Java Developer	19081	2.71%	11368	1.7
Devops Engineer	17594	2.50%	6466	2.7
Project Manager	16858	2.40%	6466	2.6
Engineer	16518	2.35%	5536	3
Data Analyst	12432	1.77%	2004	6.2
Product Manager	11981	1.70%	1479	8.1
Consultant	10872	1.55%	5642	1.9
IT System Architect	10822	1.54%	4604	2.4
Full Stack Developer	9711	1.38%	4978	2
Data Engineer	9568	1.36%	2148	4.5
NET Developer	9201	1.31%	10475	0.9
Front End Developer	9155	1.30%	8246	1.1
Analyst	7369	1.05%	2264	3.3
Data Scientist	5573	0.79%	1801	3.1
Product Owner	5243	0.75%	852	6.2
Data Architect	244	1.39%	168	1.5

(Source: Tech Nation, Adzuna, 2022)

(Source: Tech Nation, Adzuna, 2022)

Data skills are the most in-demand skills for tech jobs, but people-oriented skills are also sought after

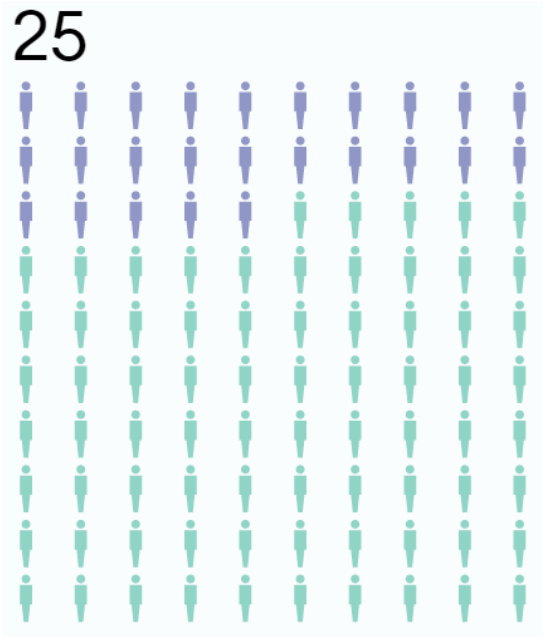
Top 20 skills demanded for tech jobs

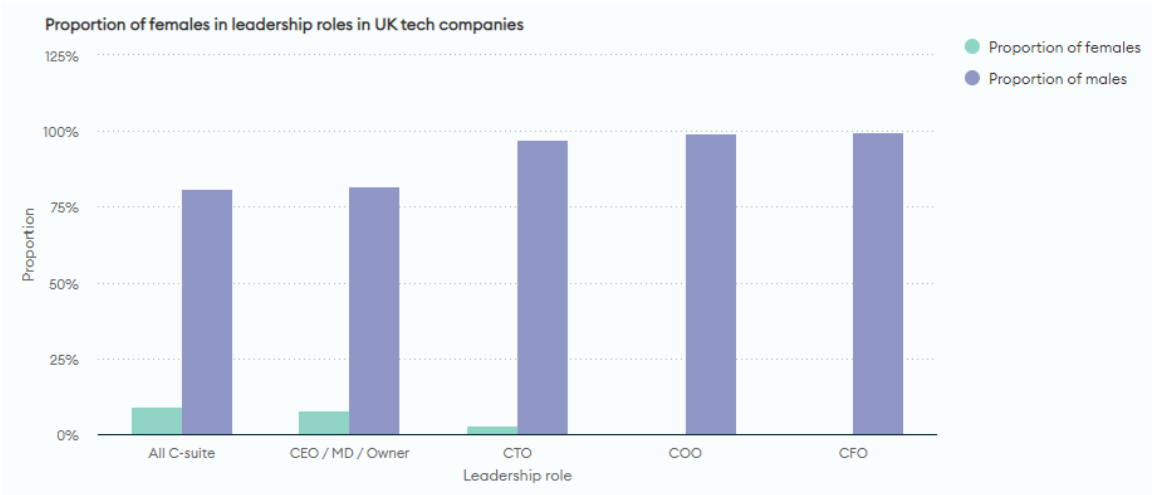
Skill	2021 ranking	2020 ranking	2019 ranking	% diff growth 2019 - 2021
Data	1	3	3	1006
Management	2	2	2	602
Engineering	3	1	1	216
Security	4	4	5	671
Clients	5	5	6	546
Communication	6	6	7	610
Business Management	7	13	21	880
Software Development	8	11	10	494
Unit Testing	9	7	9	532
Project Management	10	9	11	547
Microsoft	11	10	8	422
SQL	12	16	13	541
Amazon AWS	13	25	30	769
Analysis	14	19	24	846
.net	15	12	14	461
Architecture	16	40	42	1074
Java	17	27	19	399
Javascript	18	23	25	482
Reporting	19	24	29	633
Automation	20	29	28	454

(Source: Tech Nation, Adzuna, 2022)

Women are severely under-represented in the digital tech workforce

For every 100 people working in a digital tech job in 2019, how many were women?

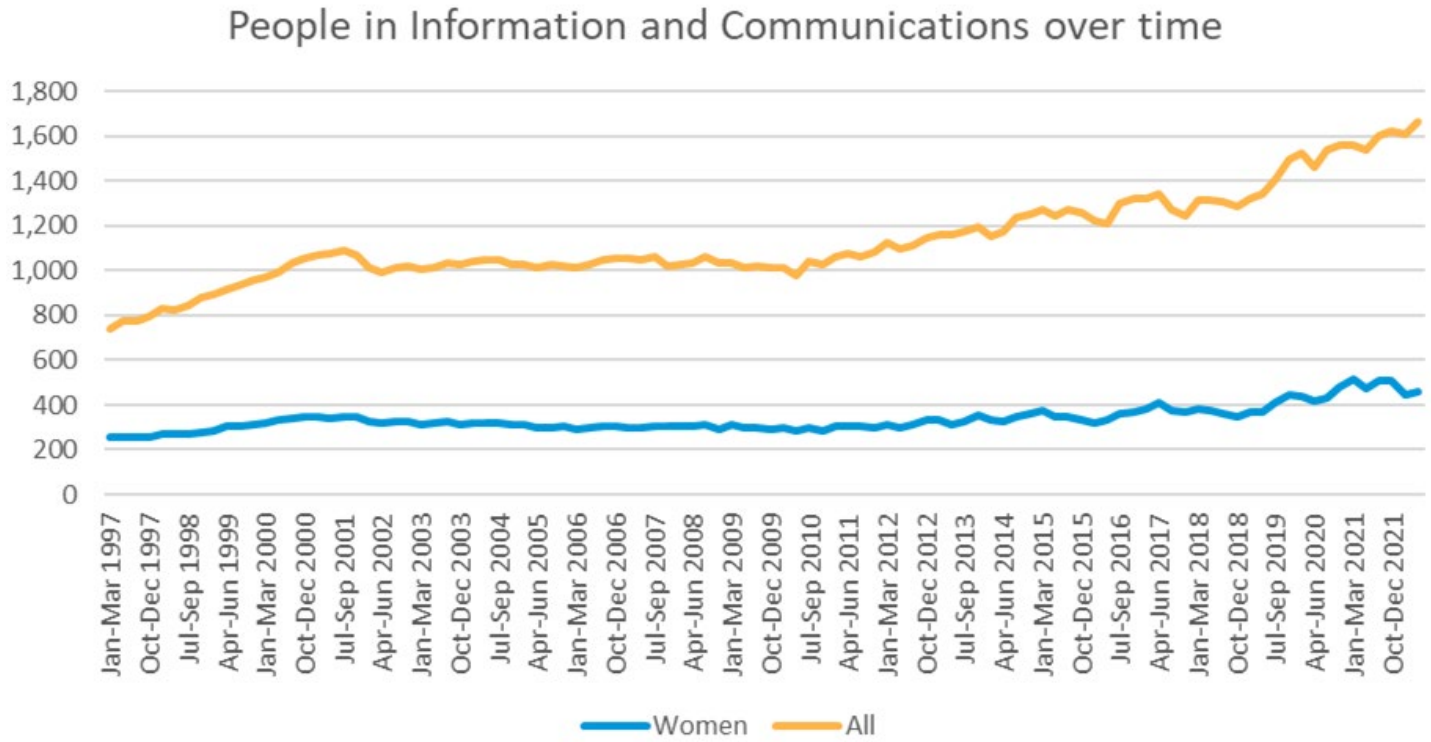




(Source: Tech Nation, Beauhurst, 2021)

(Source: Tech Nation, ONS, 2019)

While the number of people employed in the Information and Communications industry has increased over time, the percentage who are women has declined



(Source: ONS employment by industry dataset)

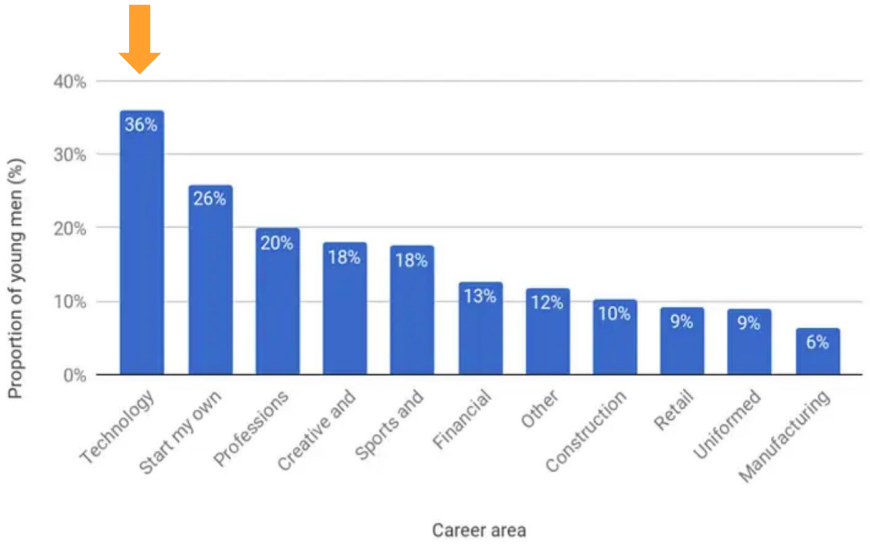
Low numbers of women in the digital sector is a problem for gender equality in terms of pay (as well as the digital skills gap)

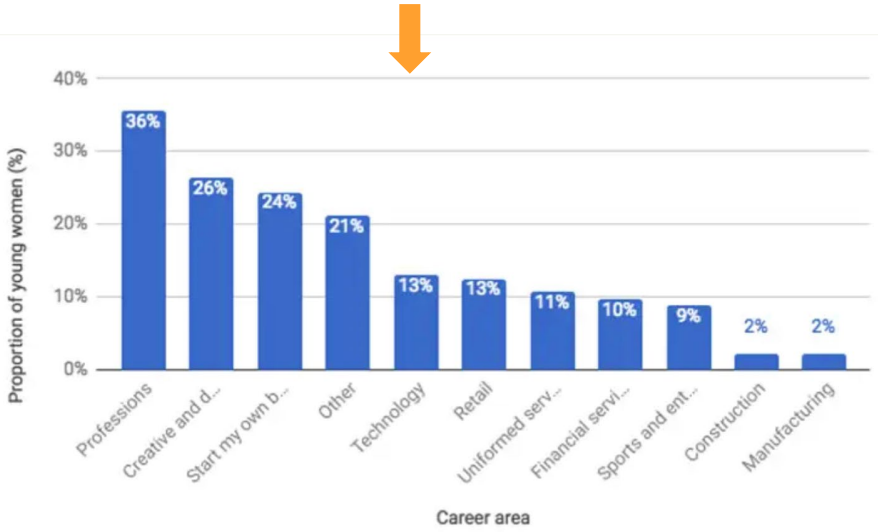
Average full-time salary for tech and non tech sectors

(Source: Tech Nation, Adzuna, 2022)

In a survey of 1000 young people, 36% of males said they wanted to work in tech, while only 13% of females said the same

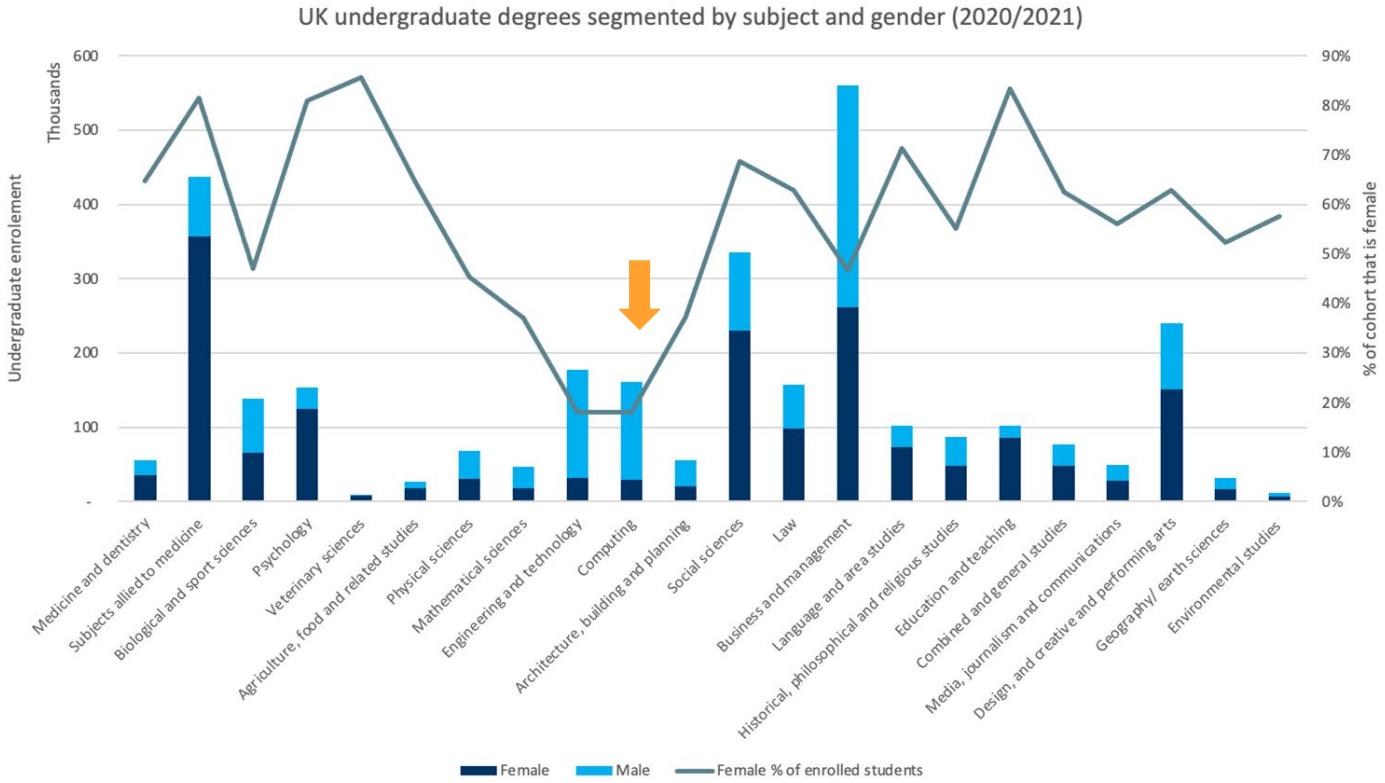
- Technology was the most popular future career choice for young men
- For young women, Creative and design (26%) and Professions (36%) (e.g. law, and medicine) were the most popular career choices
- Of the young people who wanted to work in tech, 70% were young men whilst only 30% were young women





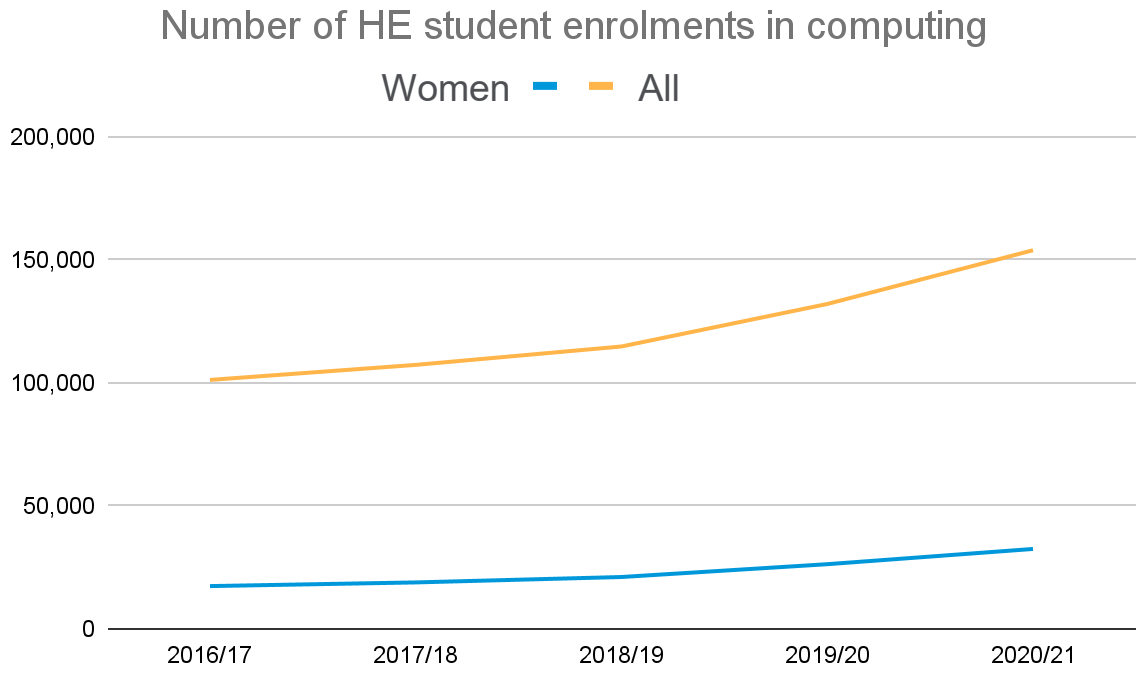
(Source: Young people's perceptions of tech careers in the UK – Tech Nation Talent: Part 3, Tech Nation, 2018, slide made by DSIT)

The proportion of university students in computing is relatively small and only 1 in 5 of them are women



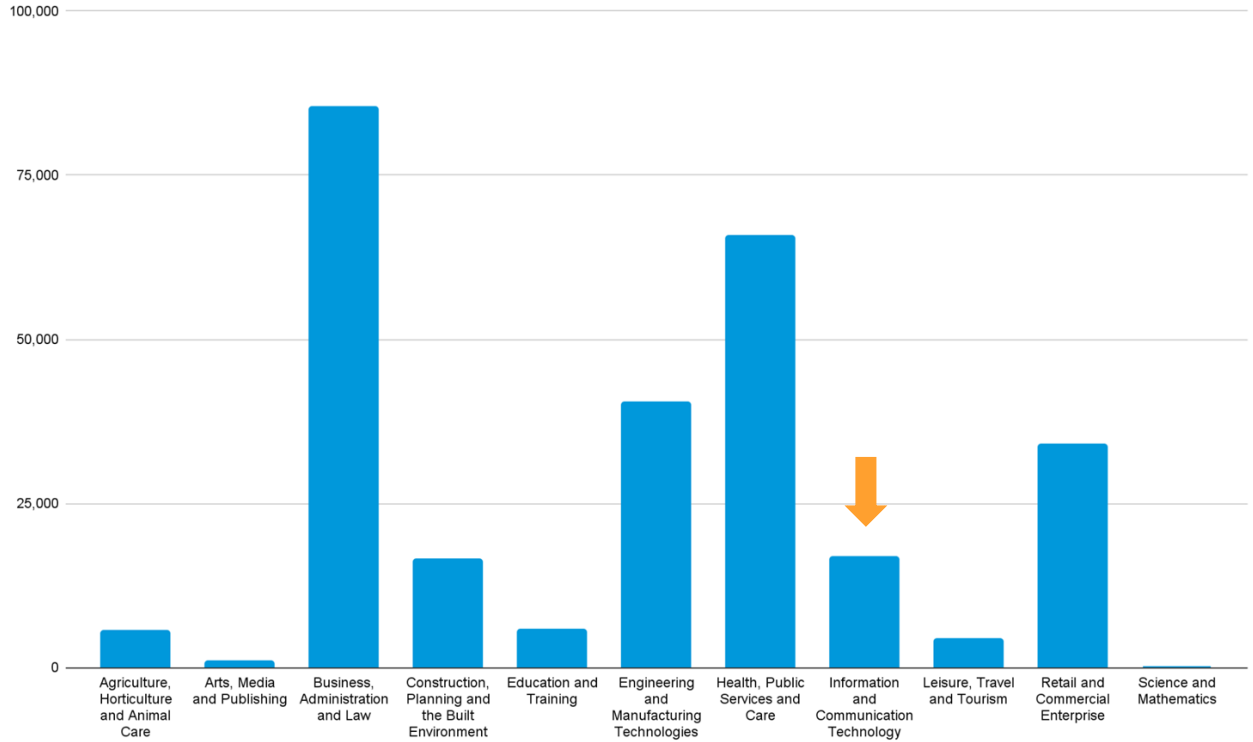
(Source: UCAS higher education student statistics)

While the number of university students studying computing is increasing, the percentage who are women is decreasing



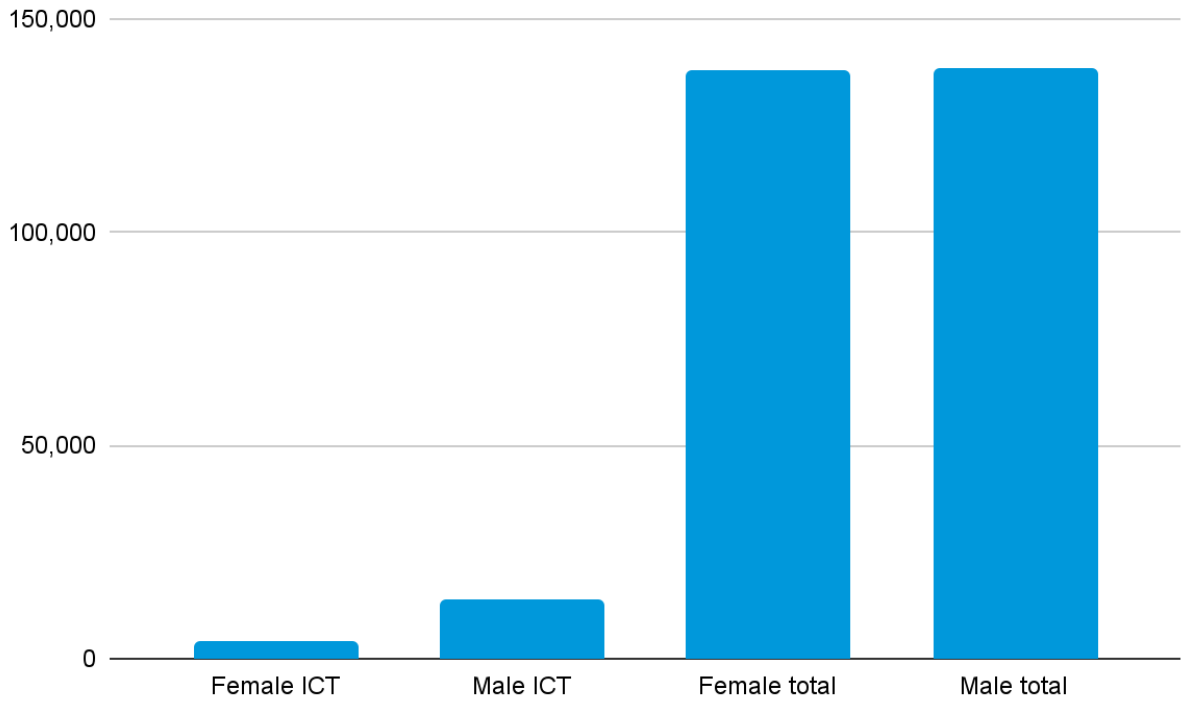
(Source: Higher Education Statistics Agency)

Only a relatively small number of apprenticeships completed in 2021 were in ICT



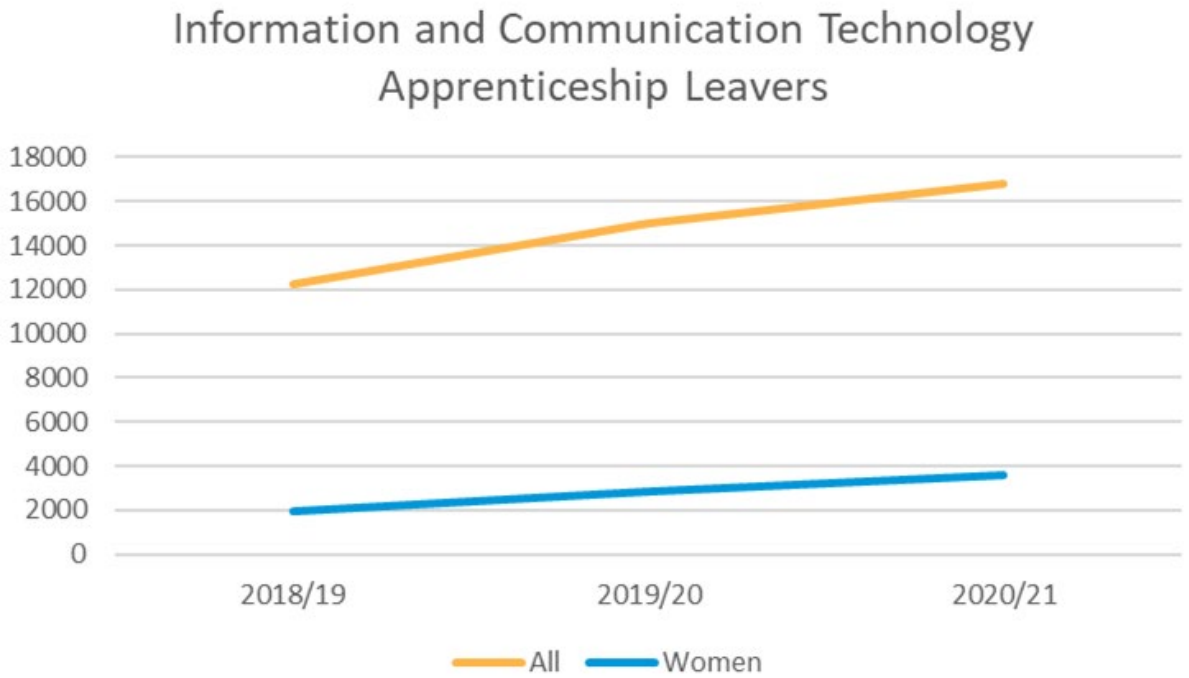
(Source: Apprenticeships and Traineeships data - GOV.UK)

Only 21% of 2021 ICT apprenticeship leavers were female (while 50% of all apprenticeship leavers were female)



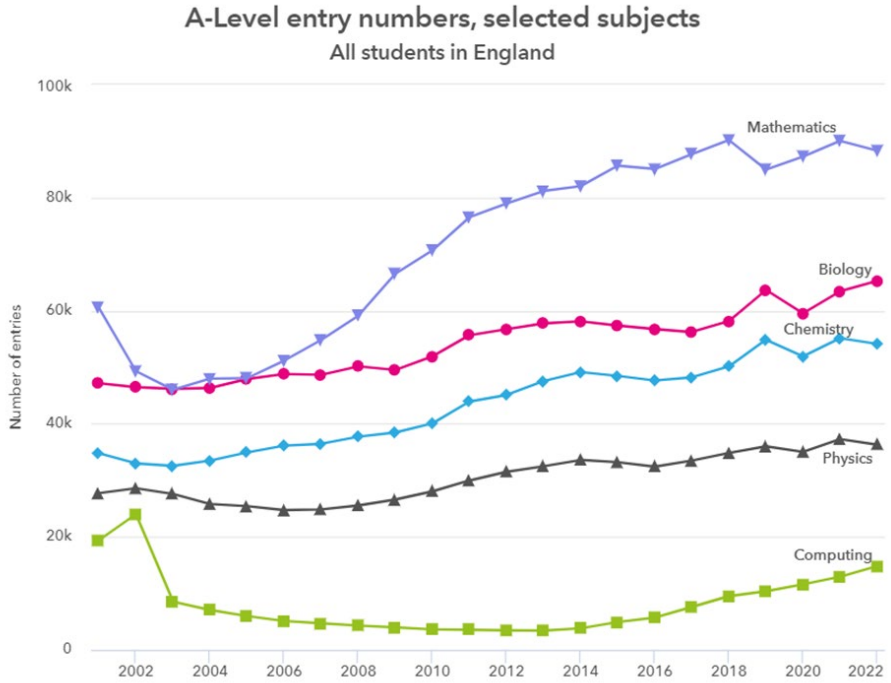
(Source: Apprenticeships and Traineeships data - GOV.UK)

While the number of people completing Information and Communication Technology apprenticeships is increasing, the percentage who are women is decreasing



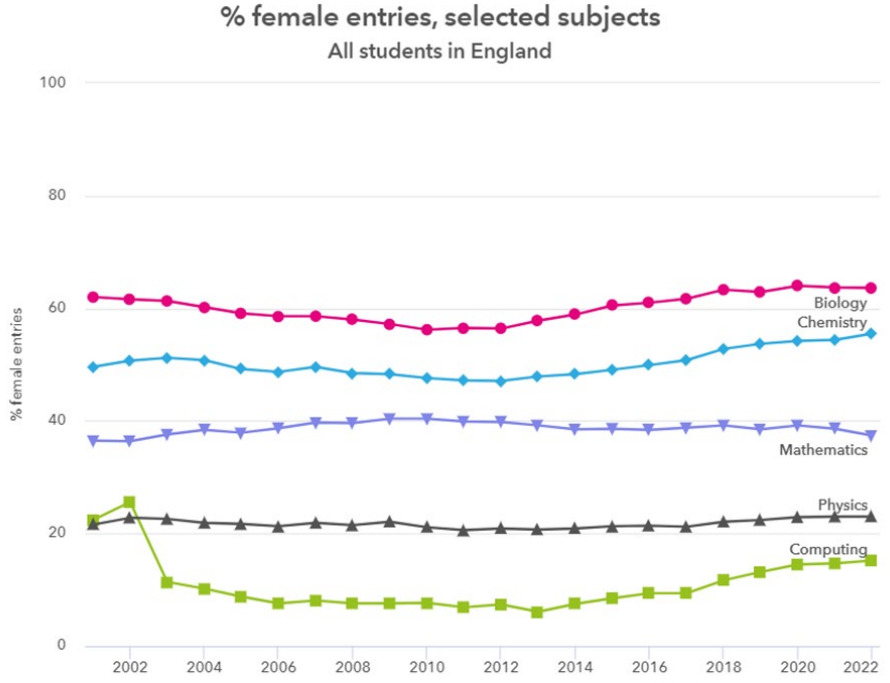
(Source: Apprenticeships and Traineeships data - GOV.UK)

Computing is the least popular of the major STEM A Levels and has the lowest proportion of female entries



Notes

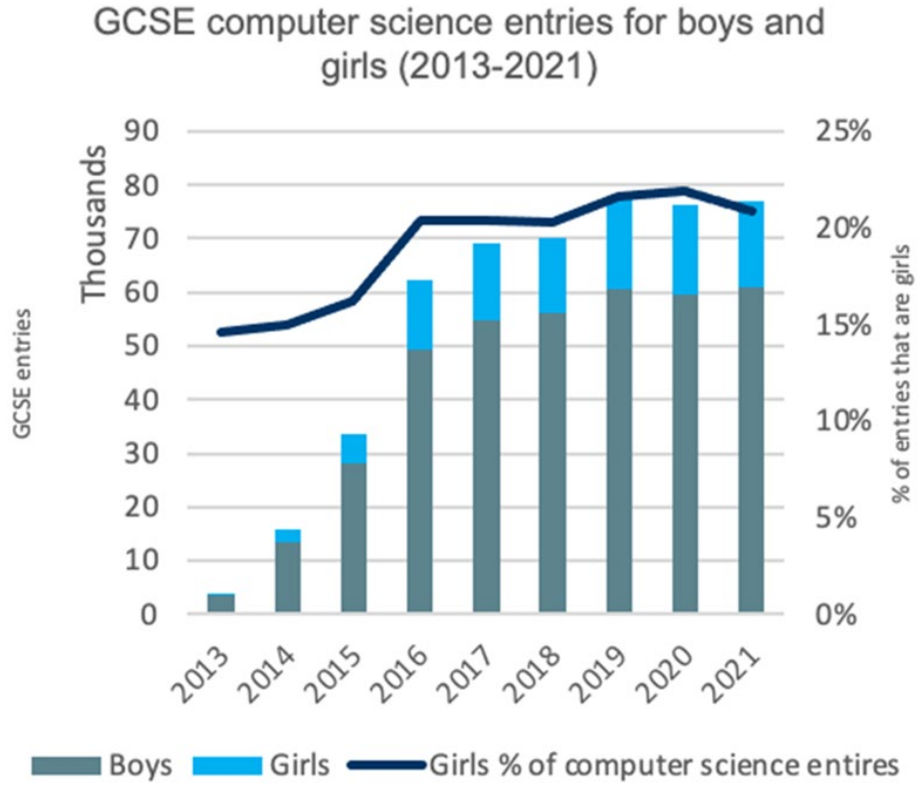
Source: FFT Education Datalab analysis of JCQ data



Notes

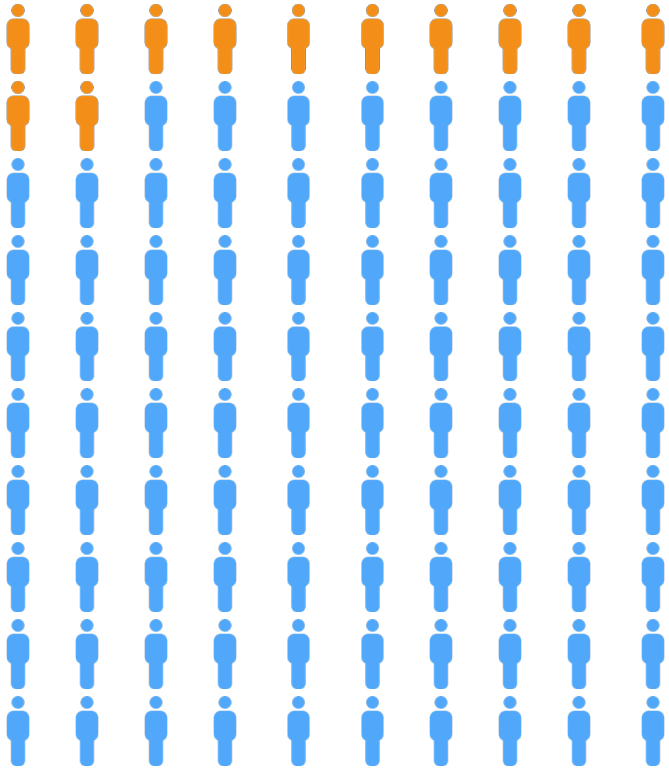
Source: FFT Education Datalab analysis of JCQ data

GCSE computer science entries have flattened since 2019 and girls currently make up only 21% of entries



(Source: Key stage 4 performance data, Department for Education)

Only 12% of digital T Level students are female



And many providers have no females enrolled at all.

(Source: Provisional T Level results - GOV.UK)

The problem: a summary

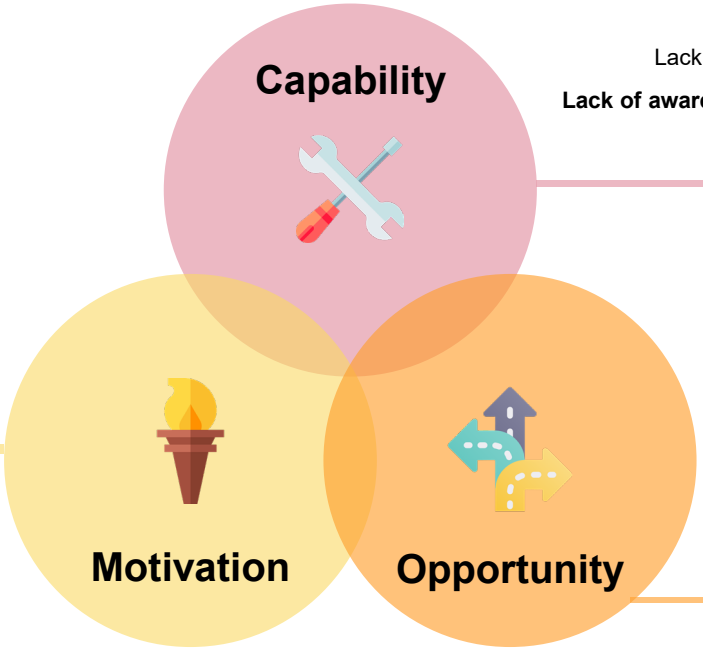
1. The digital skills shortage means that there are a high number of vacancies in digital organisations, including increasing demand for non-tech roles within the tech sector.

2. Women remain underrepresented in digital job roles, which has wider implications for gender equality.

3. Student numbers on digital courses in both Further Education and Higher Education are low, and are disproportionately low for females.

1.4.2. **Barriers** to the uptake of digital courses and careers

Overview:
Barriers to the uptake of digital courses and careers[1]



Lack of knowledge about the options

Lack of awareness of courses' utility/value

Low 'science capital'

'Too difficult'

'Not for people like me'

Perceiving it as not social or pro-social

Perceiving it as boring and not creative

Prioritising other options

Restricted options

Lack of encouragement

Low teaching quality

Given choice too early

*Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science : IS*, *6*, 42.

[1] Barriers particularly relevant to the gender gap are in **bold**.

Lack of knowledge about the options

Course choosers

Students selecting courses, and their parents, may not have a good understanding of the course content, as revealed by interviews conducted by the Behavioural Insights Team as part of the *Gender Balance in Computing* project (2022).[1]

"We were told you could take computing or media - I wasn't sure what the difference was. I spoke to Mr. P [but] went for the safer options because I wasn't sure." (Pupil)

"We didn't know that GCSE Computer Science did include programming - we'd been told that it didn't. Others had said it's all about learning how to use Word." (Parent)

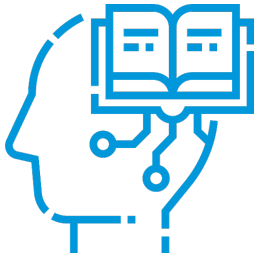
In some cases, even the teachers who are meant to advise on course selection may not have a good understanding of the computer science course content or computing career paths.

"The headteacher has a speech for every subject but for Computer Science what I get is 'this is the teacher, I have no idea what he teaches.'" (Teacher)

Career choosers

In a survey of 483 university students and 507 people[2] in work:

- 49% of women university students believe they are not studying the right subject to work in digital
- 54% of women working in non-digital jobs said the main reason they were not pursuing digital was that they did not know how to retrain or did not believe that they had studied the subjects necessary to work in digital



1 THE BEHAVIOURAL INSIGHTS TEAM (2022) Gender Balance in Computing: Options evenings and booklets
2 INSTITUTE OF CODING & Deloitte (2020) Diversifying Digital

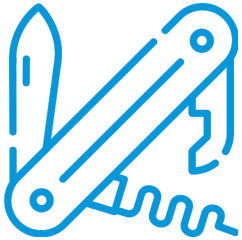
Lack of awareness of courses' utility or value*

Barrier particularly relevant to the gender gap

A major factor that discourages students from choosing STEM subjects is **doubt about their usefulness**, or relevance, for their lives.[1]

Most young people and their parents have a **narrow view** of the usefulness of STEM subjects and where they can lead.[2] For example, many may see computer science courses as relevant only if they wanted to become a programmer.

This appears to be especially the case for girls when it comes to tech: **fewer girls than boys agree that a technology qualification will help you get a wide range of jobs**.[3]



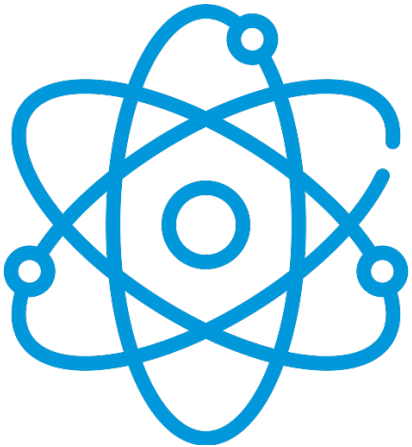
*This barrier is related to the next one: low science capital.

1 ARCHER, L., & Tomei, A. (2013). What influences participation in science and mathematics. A briefing paper from the Economic and Social Research Council (ESRC) Targeted Initiative on Science and Mathematics Education (TISME)(ESRC, Swindon).
2 ARCHER, L., Osborne, J., DeWitt, J., Dillon, J., Wong, B., & Willis, B. (2013). ASPIRES: Young people's science and career aspirations, age 10–14. London: King's College, 11, 119-132.
3 ARCHER, L., Moote, J., Macleod, E., Francis, B., DeWitt, J; (2020) ASPIRES 2: Young people's science and career aspirations, age 10–19. UCL Institute of Education: London, UK

Low science capital

A family's 'science capital' refers to their "science-related qualifications, understanding, knowledge (about science and 'how it works'), interest and social contacts (e.g. knowing someone who works in a science-related job)."[1]

The science capital of a person's family strongly affects how likely they are to plan to study STEM subjects post-16 and aspire to STEM-related careers.[1] Families with higher science capital tend to be middle class.[1]

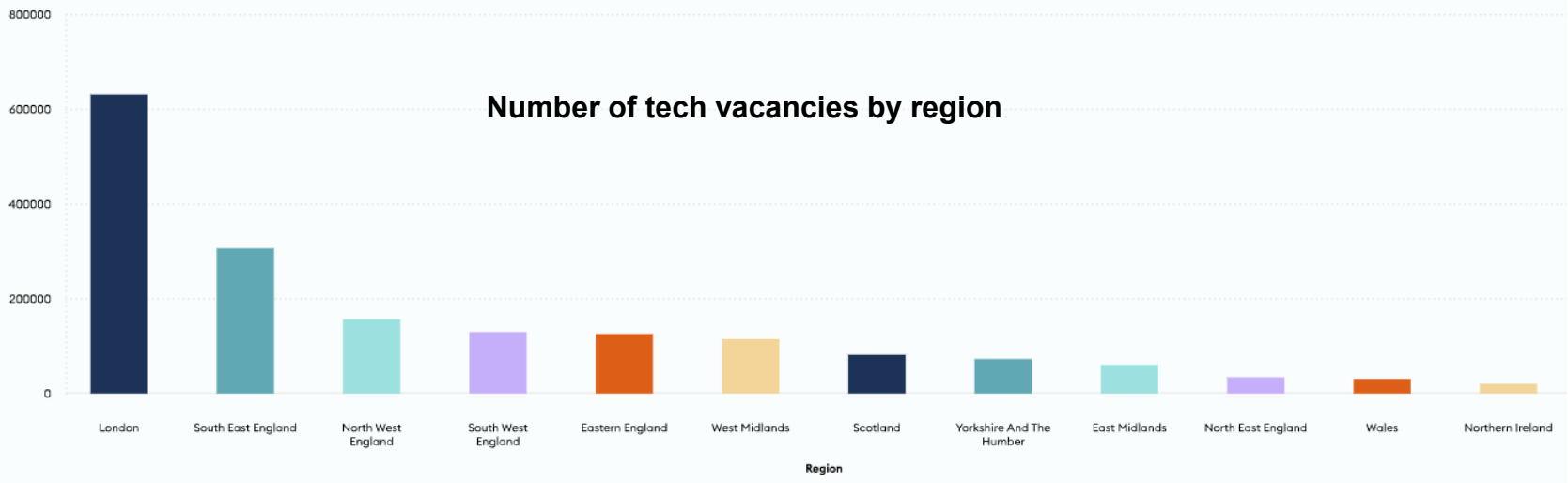


1 ARCHER, L., Osborne, J., DeWitt, J., Dillon, J., Wong, B., & Willis, B. (2013). ASPIRES: Young people's science and career aspirations, age 10–14. London: King's College, 11, 119-132.

Restricted options

Students are only able to choose a limited number of options to study.

Choices are also limited by what is on offer. For example, 30% of secondary school pupils attend one of the 54% of schools that do not offer Computer Science GCSE.[1] And the availability of tech jobs is highly affected by geography.



(Source: Tech Nation, Adzuna, 2022)

1 THE ROYAL SOCIETY (2017). After the reboot: Computing education in UK schools

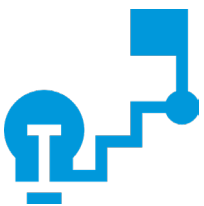
Lack of encouragement

Students are much more likely to select a subject if a key adult (e.g. parent or teacher) has conveyed to them the worth of the subject, along with the belief that they can do well in it.[1]

Teachers are often highly selective in their encouragement of students to pursue computer science, due to the belief that it is difficult to achieve a high grade.[2]

Strong ability in maths is considered a prerequisite for computer science. Although girls now receive more top grades in maths,[3] teachers and parents tend to stereotype maths and related STEM subjects as male-domains, causing them to underestimate girls' ability in these subjects.[1,4]

Girls receive less parental support than boys to pursue technology-related subjects/courses.[5]



1 ARCHER, L., & Tomei, A. (2013). What influences participation in science and mathematics. A briefing paper from the Economic and Social Research Council (ESRC) Targeted Initiative on Science and Mathematics Education (TISME)(ESRC, Swindon).
2 THE BEHAVIOURAL INSIGHTS TEAM (2022) Gender Balance in Computing: Options evenings and booklets
3 JOINT COUNCIL FOR QUALIFICATIONS (2021) GCE A Level & GCE AS Level: Results summer 2021
4 ECCLES, J. S. (2015). Gendered socialization of STEM interests in the family. International Journal of Gender, Science and Technology, 7(2), 116-132.
5 IPSOS MORI (2019) Omnibus survey of students and their parents or carers: wave 5; ARCHER, L., Moote, J., Macleod, E., Francis, B., DeWitt, J; (2020) ASPIRES 2: Young people's science and career aspirations, age 10–19. UCL Institute of Education: London, UK

Low teaching quality

This year (2022), Ofsted[1] published a subject review of computing. It finds that there remains a **shortage of suitably qualified computing teachers**, which "will have significant consequences for the quality of education that pupils receive if nothing is done to remedy the situation".

It finds that very few primary school teachers hold computer science qualifications, and that in 2018 and 2019, over half of the hours of computing taught in secondary schools were taught by a teacher without a relevant post A-level qualification.

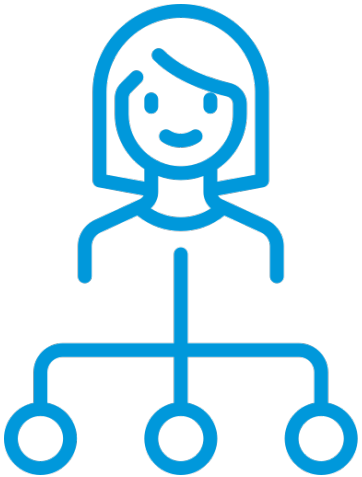
Poor teaching may reduce the number of students opting for computing courses, as teaching quality predicts students' subject-related interest.[2]

1 https://www.gov.uk/government/publications/research-review-series-computing

2 FAUTH, B., Decristan, J., Rieser, S., Klieme, E., & Büttner, G. (2014). Student ratings of teaching quality in primary school: Dimensions and prediction of student outcomes. Learning and Instruction, 29, 1-9.

Given choice too early

There is evidence that requiring young people to choose subjects to specialise in at a relatively young age (as is the case in the UK) increases gender segregation.[1]



1 JACOB, M., Iannelli, C., Duta, A., & Smyth, E. (2020). Secondary school subjects and gendered STEM enrollment in higher education in Germany, Ireland, and Scotland. International Journal of Comparative Sociology, 61(1), 59-78.
IANNELLI, C., & Smyth, E. (2008). Mapping gender and social background differences in education and youth transitions across Europe. Journal of Youth Studies 11: 213–232
YAZILITAS D, Svensson J, de Vries G, et al. (2013). Gendered study choice: A literature review. A review of theory and research into the unequal representation of male and female students in mathematics, science, and technology. Educational Research and Evaluation 19(6): 525–545.

‘Too difficult’

Computer science is regarded as a ‘difficult’ option,[1] which is only suitable for the most ‘clever’ students, notably those who are ‘naturally talented’ in maths. This perception reduces the number of people pursuing it, especially girls, who are less likely than boys to see themselves as ‘clever’, due to gender stereotypes about intellectual ability.[2] This is exacerbated by the specific stereotype that girls are less naturally talented in STEM than boys.[3]

Girls are more likely than boys to cite the difficulty of computer science, or their lack of confidence in studying it, as reasons for not pursuing it.[4]

Young women are much more likely than young men to say that the reasons they don’t want to work in tech are that they lack the necessary skills and knowledge.[5]

1 THE ROYAL SOCIETY (2017). After the reboot: Computing education in UK schools
2 BRIAN, L., Leslie, S. J., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge early and influence children’s interests. Science, 355(6323), 389-391.; ECCLES, J. S. (2015). Gendered socialization of STEM interests in the family. International Journal of Gender, Science and Technology, 7(2), 116-132
3 ECCLES, J. S. (2015). Gendered socialization of STEM interests in the family. International Journal of Gender, Science and Technology, 7(2), 116-132
4 WELLCOME TRUST. 2017. Young people’s views on science education. Science Education Tracker Research Report.
5 TECH NATION (2018). Young people’s perceptions of tech careers in the UK – Tech Nation Talent: Part 3

‘Not for people like me’

People are motivated to study and work in environments in which they feel a sense of belonging.[1,2]

Since digital and STEM are male-dominated domains, women are less likely to see ‘people like them’ represented in those fields and are more likely to feel that they don’t belong there.[3]

Additionally, STEM subjects like computer science tend to be associated with masculinity, and so girls will find it harder to reconcile aspirations for a career in digital with their gender identity (seeing themselves as a ‘normal’ girl).[4]

For women, there may also be high social costs associated with participating in digital fields - since this means being in a minority. Evidence suggests that is a barrier to participation, since rates of participation in computer science courses are much higher in all-girls schools.[5]

1 MASTER, A., Cheryan, S., & Meltzoff, A. N. (2016). Computing whether she belongs: Stereotypes undermine girls’ interest and sense of belonging in computer science. Journal of educational psychology, 108(3), 424.
2 FINK, A., Frey, R. F., & Solomon, E. D. (2020). Belonging in general chemistry predicts first-year undergraduates’ performance and attrition. Chemistry Education Research and Practice, 21(4), 1042-1062.
3 CASSIDY, R., Cattan, S., Crawford, C., & Dytham, S. (2018). How can we increase girls' uptake of maths and physics a-level? (No. R149). IFS Report.
4 ARCHER, L., & Tomei, A. (2013). What influences participation in science and mathematics. A briefing paper from the Economic and Social Research Council (ESRC) Targeted Initiative on Science and Mathematics Education (TISME)(ESRC, Swindon).
5 THE ROYAL SOCIETY (2017). After the reboot: Computing education in UK schools

Perceiving digital as neither social nor pro-social

Girls are more likely than boys to endorse communal goals - i.e. girls say that they want to work with people rather than alone and that they want their work to involve helping others.[1]

There is a stereotype that certain STEM fields, including digital, do not help fulfil communal goals, which discourages girls from pursuing them.[1]

1 DIEKMAN, A. B., Clark, E. K., Johnston, A. M., Brown, E. R., & Steinberg, M. (2011). Malleability in communal goals and beliefs influences attraction to stem careers: Evidence for a goal congruity perspective. Journal of personality and social psychology, 101(5), 902.

Perceiving it as ‘boring’ and not creative

There is research suggesting that some students, especially girls, report finding computing subjects, as they are taught in schools, to be “boring”[1,2,3] and not creative.[4]

There is also evidence that girls are particularly motivated by the creative,[2] humanistic[5] aspects of subjects.

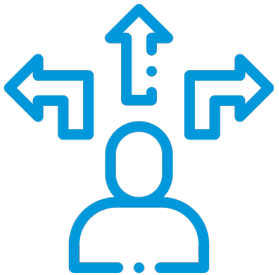
1 ANDERSON, N., Lankshear, C., Timms, C., & Courtney, L. (2008). 'Because it's boring, irrelevant and I don't like computers': Why high school girls avoid professionally-oriented ICT subjects. Computers & Education, 50, 1304-1318.
2 LASEN, M. (2010). Education and career pathways in Information Communication Technology: What are school girls saying? Computers & Education, 54, 1117-1126.
3 PAU, R., Grace, M. & Hall, W. IT’s boring: A comparison of male and female students’ experiences of ICT GCSE/A-level and Computing A-level lessons and their impact on student motivation. School Science Review, 92:89–94, 2011.
4 WELLCOME TRUST. 2020. Young people’s views on science education. Science Education Tracker Research Report.
5 SAYERS, S. (2002). Is gender still on the agenda as an issue for design and technology? In B. Barnes, J. Morley, & S. Sayers (eds.), Issues in design and technology teaching (pp. 169-184). Routledge Falmer.

Prioritising other options

People have limited options, which means that subjects/fields are inherently in competition with each other.

If a person values another option more than the available digital option(s) and/or expects more success elsewhere, then they will be inclined to choose other options.[1]

This is particularly likely for girls, who tend to a) have a relatively poor STEM self-concept (due to stereotypes),[1] b) have a relatively higher self-concept in other areas,[2] c) value non-STEM subjects more than boys.[3]



1 ECCLES, J. S. (2015). Gendered socialization of STEM interests in the family. International Journal of Gender, Science and Technology, 7(2), 116-132
2 SKAALVIK, E. M. (1990). Gender differences in general academic self-esteem and in success expectations on defined academic problems. Journal of Educational Psychology, 82(3), 593
3 LAUERMANN, F., Chow, A., & Eccles, J. S. (2015). Differential effects of adolescents' expectancy and value beliefs about math and english on math/science-related and human services-related career plans. International Journal of Gender, Science and Technology, 7(2), 205-228.

1.5 Interview findings

THE BEHAVIOURAL INSIGHTS TEAM

Recap: Interview sample

Nine 30-minute interviews were conducted with three distinct groups of students:

1. Further Education (FE) choosers
2. Higher education (HE) choosers
3. Career choosers

The interviews explored:

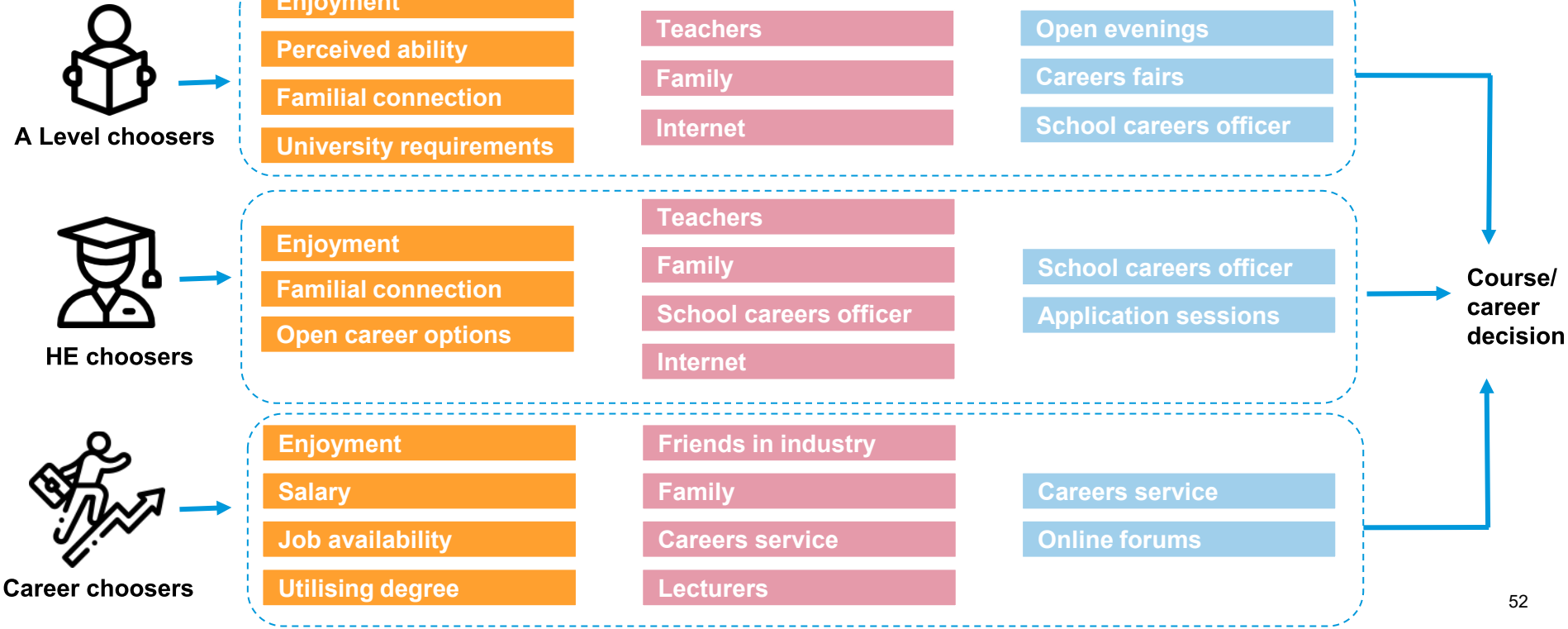
A. Participants' decision-making process for subjects/careers
B. Participant perceptions of digital subjects/careers
C. Early message concept testing

Sample characteristics		
Gender*	Male	4
	Female	5
Age	15-16 (FE choosers)	3
	16-18 (HE choosers)	3
	18-25 (Career choosers)	3
Location	North (Inc Yorkshire, NW and NE)	1
	Midlands (inc East, EM and WM)	3
	South (Inc SE,SW and London)	5
	Total in sample:	**9**

**there were a mix of genders in all age or 'chooser' groups*

1.5.1. The subject / career decision-making process

Mapping the decision-making process



Decision-making timelines varied at an individual level

FE choosers were not certain of their subject choices

- Some FE choosers had begun thinking about their A Level subject choices when deciding their GCSE subjects.
- No FE choosers had firmly decided on all of their subject choices.
- Factors affecting their decision-making timeline included mock exam results and school deadlines.

HE choosers were confident in their course choices

- All HE choosers knew they wanted to apply to university and which course they wanted to study.
- Most HE choosers were not clear on their plans after university, and therefore this was not the main factor in their decision.

Career choosers were fairly abstract in their plans

- Most career choosers did not have a clearly defined idea of the types of jobs they wanted to apply for. Some had an idea of their sector of interest, but not a specific type of role.
- Most only felt pressure to apply for jobs or placements towards the end of their HE course.

Implications for the timing of communication campaigns:

Target communications to Year 10 and early Year 11, before students finalise their decisions

Target communications to Years 11 and 12, as decisions have often been made by Year 13

Target communications throughout university courses, including around and after graduation

1.5.2. Perceptions of digital subjects

Students recognise the value of digital skills gained from studying digital subjects

Facilitators

- Students recognised the increasing **importance of digital skills** in everyday life, and therefore the value of subjects that teach them.
- Most HE choosers believed that the skills gained from studying digital courses would be **useful in a range of job roles.**
- Students suggested taster sessions and talks from people who have studied digital courses would be helpful for improving awareness and increasing the appeal of digital courses.

“Coding, excel, they are desired skills. You would seem more desirable to employers. If you already knew these skills it is an advantage” (HE chooser)

“"Everything's going to be on computers and we'll use paper less and less. It'll be really good to have have digital literacy in the future.” (A Level chooser)

Digital courses lack visibility and are perceived to be difficult

Barriers

- Similar to findings from our *Gender Balance in Computing* study (2022), students had **limited knowledge of digital subjects** and courses. FE choosers were often unsure whether digital A Level subjects were even offered at their school.
- Students **perceived digital subjects to be difficult**, which mirrors findings from the literature review. Difficulty was mentioned by both genders, but our sample is too small to compare with gendered trends identified in larger datasets.
- Despite saying they felt digital skills would be useful in a range of jobs, one HE chooser felt that digital HE courses **could restrict career prospects** relative to other degree subjects.
- Some FE choosers **prioritised subjects required by university** courses, which did not include digital subjects.

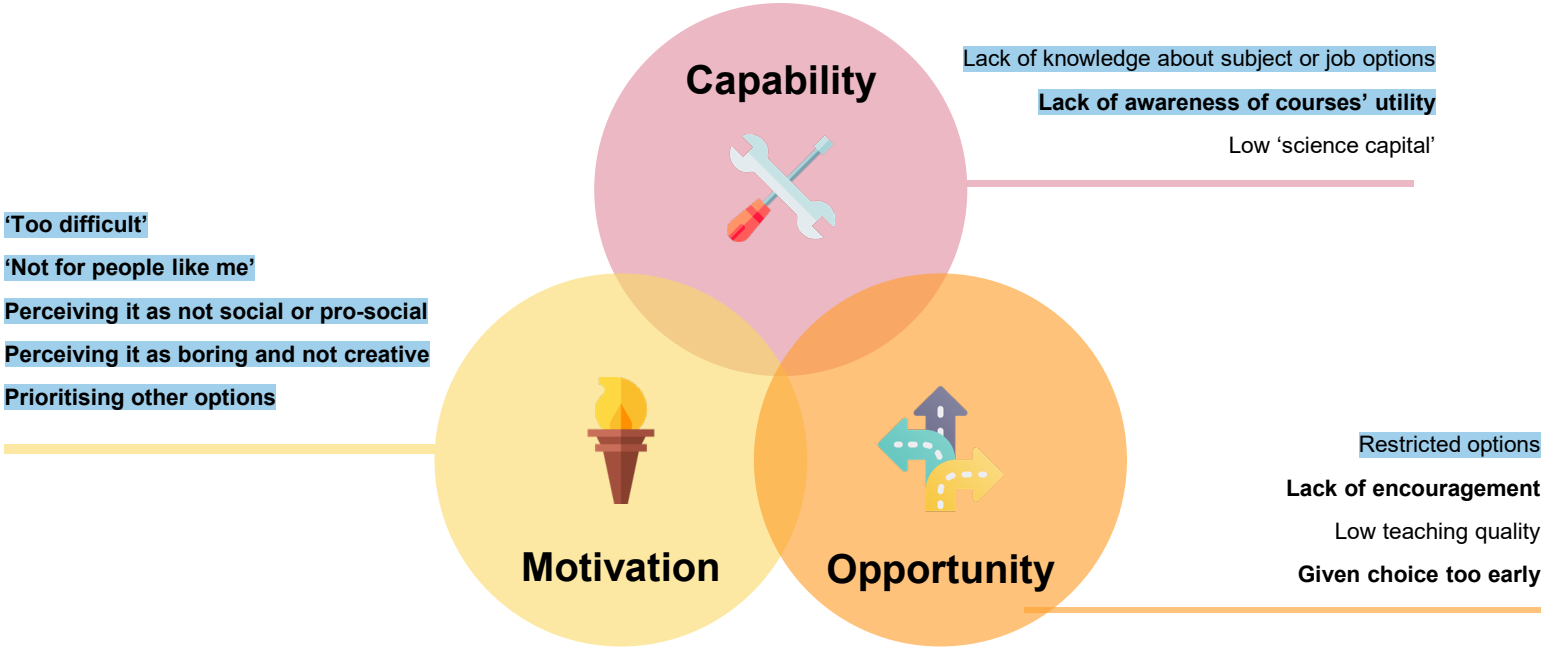
"I think they are quite difficult. I have a friend who takes ICT now, and she had loads of work" (FE chooser)

"If you're looking for a job that's not tech based, it might be a less relevant qualification than say English so it feels like the job opportunities after university may be more limited." (HE chooser)

1.5.3. Perceptions of digital job roles and careers

Barriers to the uptake of digital courses and careers evidenced in the interviews[1,2]

Note: students were prompted on most barriers identified in the literature review. The barriers not evidenced in the interviews (those not highlighted in blue) were not prompted as they are less of a priority for message testing and more difficult for students to self-report.



*Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science : IS*, *6*, 42.

[1] Barriers evidenced in the student interviews highlighted in blue.
[2] Barriers particularly relevant to the gender gap are in **bold**.

When prompted, students were aware of the diversity in digital job roles

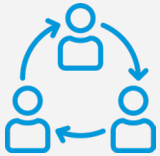
FE choosers
HE choosers
Career choosers

What kinds of job roles come to mind when you think about digital skills?

Students make some generalised assumptions about digital roles

What do you imagine a digital job role to be like?

Most students imagined digital jobs to be office-based with a relaxed working culture. Career choosers imagine them to be hybrid.



Some students imagined digital jobs to be collaborative, whereas others thought they would mainly involve independent work. This links to the stereotypes associated with digital roles identified in the literature.

All students agreed that digital roles are well paid.

Students thought that digital roles would require working standard 9-5 hours.

Salary and office culture are appealing aspects of digital jobs

Facilitators

- Students believed that jobs involving digital skills offer **competitive salaries,** which some found appealing.
- Some students imagined digital companies to have a **relaxed office culture** with shorter working hours than some other sectors.
- Insights from **friends and individuals working in the sector** were highly valued by those considering working in digital or tech roles.

“The best way to get to know what a job or industry is really like is by asking people who are actually in it, not people who are at the top, the people who are at the bottom."
(Career chooser)

Stereotypes associated with digital job roles persist

Barriers

- Some students imagined the work in digital job roles to be **independent and therefore isolating**, which chimes with findings from the literature review. These students expressed a preference for more interactive roles.
- Similarly, some students thought that digital roles would be **boring and monotonous.** These findings reflect barriers identified in the literature.
- There was a perception that people **either have or do not have a natural aptitude** for the technical skills required in a digital role.
- Only two students (one man, one woman) mentioned the **gendered reputation of the digital sector,** one with reference to the culture of tech companies in particular.

"I'd imagine like a massive office with loads of individual computer booths. It's not really appealing, it feels quite isolated just being stuck at your desk all day." (HE chooser)

"I feel like you're very good at it or you're not. I feel like if you want to be a good programmer, you can teach yourself but unless your brain is wired in a certain way you're not going to be great at it." (Career chooser)

"Some tech companies have a macho reputation and I don't think I'd feel comfortable there…I wouldn't want to work in a company where you only fit in if you are a white male" (male career chooser)

1.5.4. Early message concept testing with interview participants

Early message concept testing

We used the interviews as an opportunity to test early concept message ideas. This section of the interview included asking students about their opinions on:

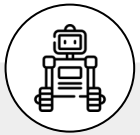
- Specific terms of interest to DSIT (digital, artificial intelligence, cyber)
- Digital course titles, including A Level and T Level courses
- A range of digital job role titles
- Five early message concepts

Perceptions of the terms ‘Digital’, ‘AI’ and ‘Cyber’ varied, though attitudes towards cyber were more negative

Attitudes towards the term Digital varied across the different age groups

- Attitudes towards ‘digital’ for FE and HE choosers were largely positive, due to a perception that it is modern and relevant to a range of careers.
- Career choosers in the sample had a more technical understanding of the term digital, and their attitudes towards the term were more neutral or in some cases negative.

“Digital just means 1 and 0 as opposed to analogue, so it is a fuzzy word. You are actually working in technology." (Career chooser)



Artificial intelligence (AI) was perceived to be exciting but intimidating

- FE and HE choosers associated the term AI with robots, while career choosers had more nuanced understanding.
- Attitudes towards AI were mixed - in general it was perceived as an exciting and interesting field. However some students found it intimidating due to a perception that it was highly complex and difficult.

“…I think it would certainly grab interest but also feels it’s pretty intimidating as it’s really technical and advanced." (HE chooser)

Cyber was generally perceived neutrally or negatively

- Participants generally felt the term ‘cyber’ was outdated or boring, and there was a sense that it’s frequently used incorrectly or in the wrong context.
- Some FE and HE choosers strongly associated the term with cyberbullying, while it made others think about cybersecurity. Neither term was considered particularly appealing.

"Honestly it sounds like something from the 2000s, it sounds outdated" (Career chooser)

The appeal of course and job titles varied according to personal interests

Digital course titles

- Students found course titles using the word ‘design’ (e.g., the ‘Digital Technology and Design’ A Level course) the most appealing due to an association with creativity. This reflects findings from the literature review that students do not typically associate digital subjects with creativity.
- Students found the course title ‘Computer Science’ the least appealing as they associated it with high levels of difficulty. This aligns with national data that shows computing is the least popular of major STEM A Levels.

“For digital tech and design, that sounds like more of a creative course, and it would appeal to people who are maybe not as wanting to go into hard sciences.” (FE chooser)

Digital job titles

- Preferences for digital job titles were varied. This was often determined by personal levels of interest in different types of roles.
- Some students found job titles such as ‘Digital Marketing Manager’ appealing because of the more strategic nature of the role, whilst others preferred titles of creative roles such as ‘Graphic Designer’.
- FE learners expressed surprise at the variety of job titles associated with digital job roles.

“All of them seem quite interesting compared to jobs I’d expect to come from working with computers” (FE chooser)

Students were positive about message concepts that emphasised accessibility and variety of digital jobs

‘No one is born with a perfect digital career.’

- FE and HE students found this to be an overall positive message. They particularly valued the suggestion that a digital career is a possibility for everyone.
- Career choosers were more critical and said the message was too ambiguous.

“It’s unclear, it’s too wordy for the meaning”
(Career chooser)

‘Not everyone who works in digital is a genius. Most are normal people who work hard and keep trying even when things are difficult.’

- FE and HE students found this message appealing in the way that it frames digital jobs as accessible to everyone, rather than exclusive to very smart people.
- Career choosers were less positive, commenting that it is a generic statement that is not specific to digital careers.

“This helps people realise that they can do it and it just takes perseverance”
(FE chooser)

‘People who study digital subjects can have exciting and well-paying jobs and get to work on lots of different things, from music to fashion to healthcare.’

- Students across all groups liked that this message highlights how digital subjects can lead to jobs in a wide variety of sectors. This directly challenged some of their stereotyped views of digital job roles.

“Usually people think of office jobs in ICT, but this suggests it is more broad”
(FE chooser)

Quotations from well-known and respected individuals can add value

‘As Barack Obama said: "Don't just buy a new videogame. Make one. Don't just download the latest app. Help design it. Don't just play on your phone, programme it"’

- All students thought this was an effective message.
- They commented that an audience is more likely to take a message seriously when it is delivered by someone as well-known and respected as Obama.
- The reference to everyday technology was thought to make it exciting and relatable for young people.

“I like that, I like Obama, I like the personal responsibility, it makes it exciting”
(Career chooser)

‘"Part of what made the Apple Mac computer great was that the people working on it were musicians, poets, artists, zoologists, and historians. They also happened to be the best computer scientists in the world" - Steve Jobs’

- Again, all students thought this to be an effective message.
- They liked the association with Apple as a successful tech brand, but also appreciated how the quote links technical and non-technical subjects and jobs. This challenged the stereotypical perception that people in digital job roles are not creative.
- Though some other messages also highlighted the diversity in digital job roles, overall students reacted more positively to this quote.

“Often people see STEM as separate from humanities… bridging the gap between them makes it seem less isolating”
(HE chooser)

Students prefer a messenger whose opinion they trust

When asked who they would prefer to receive a message about digital subjects or careers from, students almost unanimously agreed that they would prefer it was from someone who is working in a digital role. They felt that someone who had first-hand experience would be the most helpful and authoritative messenger.

"Someone already in a digital career… they have more knowledge and experience which makes them feel more helpful and like they know what they're talking about." (HE chooser)

Where possible, students said they would prefer a messenger to be both a friend and someone who has experience working in a digital job role. FE choosers were particularly keen for the messenger to be someone they knew personally and trusted.

In the early message concept testing, students also appreciated quotes from well-known individuals who were not necessarily working in a digital job role, e.g. Obama, but whose opinion they value and respect.

"If you can get someone who is popular with people our age and they advertise something, it is more appealing than the government." (HE chooser)

Students were less positive about receiving messages directly from the government, with the exception of interesting statistics.

"If there was… a reliable statistic about the tech industry, I would be interested in hearing that from the government" (Career chooser)

1.6. What might boost uptake?

THE
BEHAVIOURAL
INSIGHTS
TEAM

Implications for message generation (1)

1

Highlight the diversity of job roles that involve digital skills, particularly creative roles

Messages should emphasise the wide range of available job roles that utilise digital skills, particularly less technical and more creative roles. This will demonstrate that digital subjects and courses can be useful for a range of careers beyond those stereotypically associated with digital jobs.

2

Present digital job roles as collaborative, social and well-paid

Messages should demonstrate that many digital job roles involve regular teamwork, collaboration and socialising with colleagues. Average salaries should also be advertised as this has been identified as an appealing aspect of digital roles.

3

Advertise digital subjects and courses beyond Computer Science

Messages should advertise the range of digital A Level and T Level subjects and HE courses on offer, particularly creative subjects and courses. They should avoid use of ‘Computer Science’ as a subject/course title as this is not appealing to most students.

Implications for message generation (2)

4

Emphasise that digital subjects and job roles can be accessible to and achievable for everyone

Messages should focus on accessibility and inclusivity. They should specifically challenge the stereotypes of digital subjects and job roles being difficult and therefore reserved for academic individuals, as well as gendered perceptions of tech companies and the wider sector.

5

Use the terms ‘digital’, ‘Artificial Intelligence’, and ‘cyber’ with caution

Messages should only include these terms in context and when targeting specific audiences. Understanding of the terms vary across student groups and attitudes towards them are mixed. Avoid use of the term ‘cyber’ as this was viewed negatively.

6

Use the voice of people who have relevant experience and/or are well-known and respected

Messages should be delivered by relatable people with first-hand experience of digital courses or careers. Alternatively, messages should be delivered by individuals who are well-known and respected by the target group, and preferably working in the digital sector.

2. Testing the impact of messages on boosting uptake of digital courses and careers: results

THE BEHAVIOURAL INSIGHTS TEAM

PREDICTIV

2.1. Executive summary

THE
BEHAVIOURAL
INSIGHTS
TEAM

MESSAGES TESTED

INTERESTS

My favourite subject at school was music. Now I decide what song plays next.

SOCIAL IMPACT

Some organisations house the homeless, some fight for equal rights, and some advocate for refugees. **To do so, they all need people with digital skills**.
Digital careers can help you help others.

TESTIMONY

*"One of the cool things about doing a digital **subject/career** is that your skills are needed in pretty much every sector, so you have opportunities across the board with all kinds of teams. I've done sustainability, research, banking and psychology"* Ilsa, 27 years old.

MESSENGER + INCLUSIVE

"Part of what made the Apple Mac computer great was that the people working on it were musicians, poets, artists, zoologists, and historians. They also happened to be the best computer scientists in the world" Steve Jobs

MESSENGER + ACTION

As Barack Obama said: *"Don't just buy a new videogame. Make one. Don't just download the latest app. Help design it. Don't just play on your phone, programme it".*

DESIGN

Whether it is Netflix, TikTok, Spotify or Twitter, our daily lives are made up of digital experiences. With a digital career, **you could be the one who designs them**.

SECTOR AVAILABILITY

Imagine starting out your career in healthcare, switching to fashion and then trying out investment banking. **With a digital career, you can.**

JOB DEMAND

Digital roles are #1 in the UK for most job opportunities. Whether it's healthcare, fashion, journalism or sports, digital careers open the door to all kinds of exciting, creative and highly-paid opportunities.

1. Executive summary

BIT ran an online experiment with a sample of 4,548 A/T level or equivalent students, university students and recent graduates in England from 11 November - 13 December 2022 to **test how different messages influence uptake of digital university courses or apprenticeships or careers.**

KEY FINDINGS

There was **not one single best-performer across all ages.**

1. **For A/T level or equivalent students**, **all messages (except 'Interests'** and **'Messenger + action') were effective** at boosting intent to apply to a digital course. All messages except 'Testimony' boosted clicks to learn more about digital courses and apprenticeships.

2. **However, for university students/recent graduates (where baseline interest was already high), none of the messages boosted stated interest** compared to no message. The 'Interests' and 'Design' messages boosted university students' and graduates' clicks to learn more about digital careers.

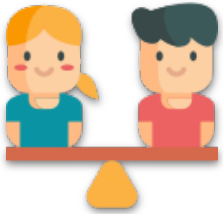
The messaging itself was **perceived positively by most participants, but the mock-ups (without professional imagery) are likely to have lowered impact.**

1. 7 in 10 people found the messages trustworthy and felt that digital courses/careers were achievable.

2. However, only 1 in 2 found the message relevant to them, with women giving far lower relevance ratings than men.

Overall, attitudes towards digital courses and careers were positive. 8 in 10 thought they offer equal opportunities, are creative and rewarding. However, a majority thought they are difficult.

% who think that digital courses and apprenticeships / careers...

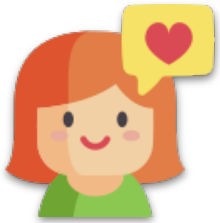


offer opportunities to people of all genders, ethnicities and socioeconomic backgrounds

83%

are creative

80%



are rewarding

80%

are not boring

78%

are not difficult

43%

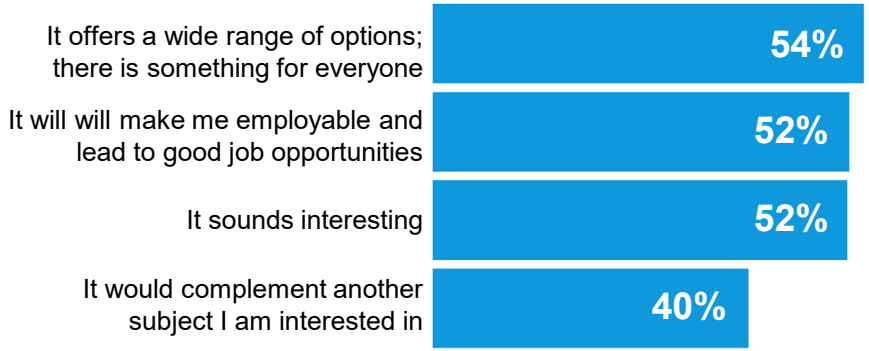
Data collected by BIT on 11 November - 13 December 2022.

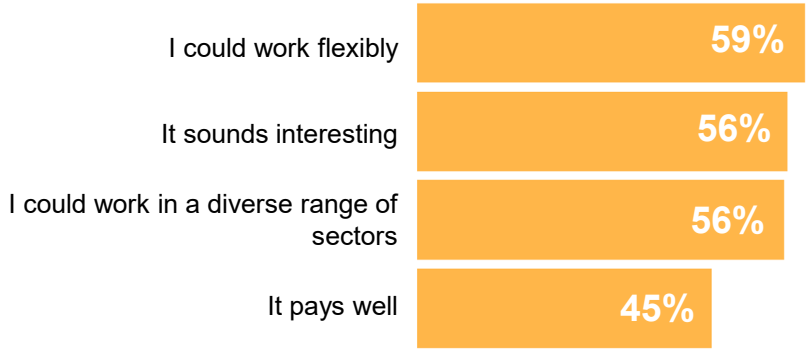
Intent.

A/T level or equivalent students
University students or recent graduates

The top reason for considering a digital course or apprenticeship is the wide range of options offered. The top reason for considering a digital career is that it allows you to work flexibly.

Of those who would consider applying for a digital university course or apprenticeship/a digital career, % who would do so because… *(n = 1,439 / 1,734)*





34% of people would consider applying to a digital course or apprenticeship because they **know someone who has the same job they want**, 32% because it **sounds important**, 31% because it's **similar to what they're already studying** and 23% **already applied**.

Other free text responses: *"I work in Games Design course and as much as we have a lot of work to do it **continually inspires me and resparks that motivation I have to make a game that can make people happy**"*
*"It will **increase my chances at finding a job** in the future **with the increasing technological advances**"*

35% of people would consider a digital career because it **would challenge them**, 29% because it's **similar to what they are studying/studied** at university, 29% because it **sounds important**, 27% because they **know someone who enjoys their digital career**.

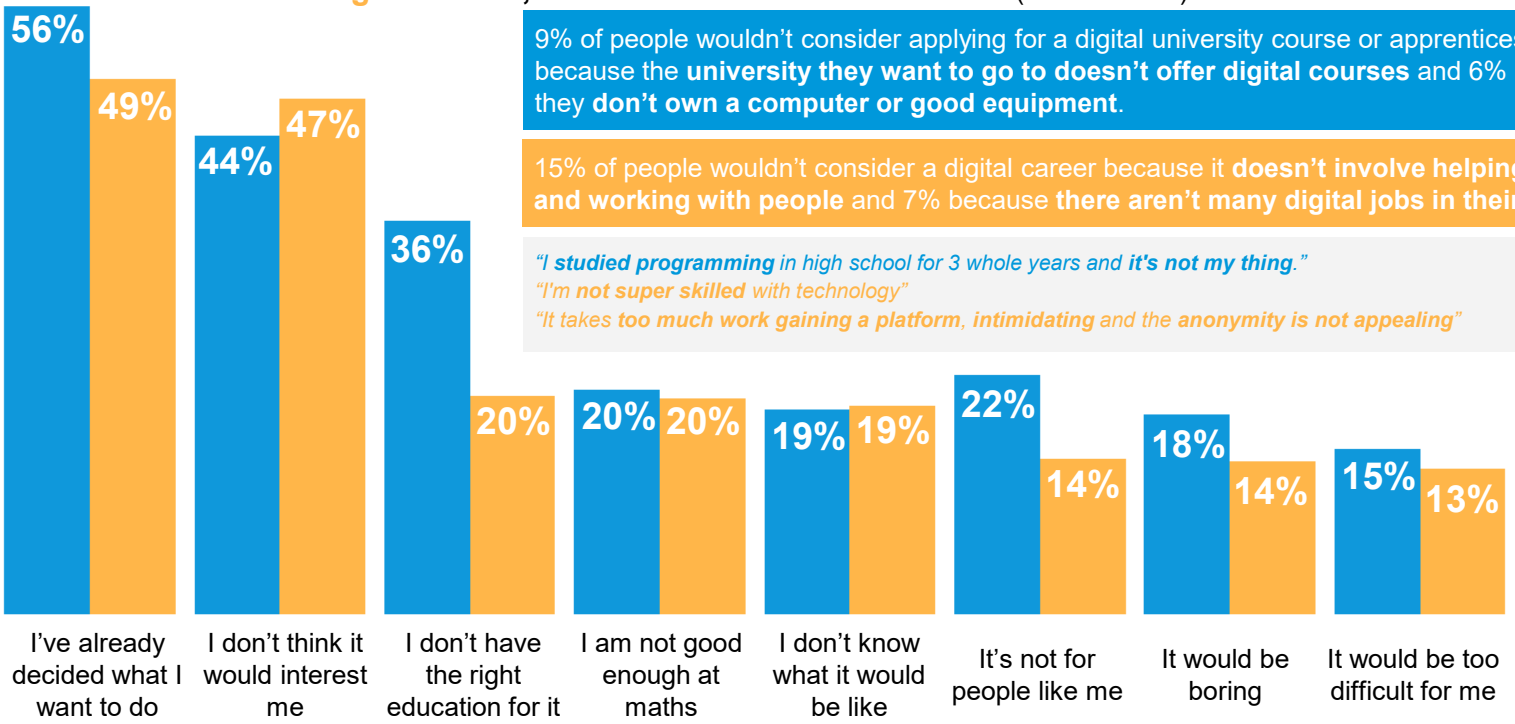
Other free text responses: *"I could **look into careers sustainability-wise and contribute to society around me**"*
*"It feels **relevant in an increasingly digital world**"*
*"It's **futureproof**"*
*"Opportunities to **see your work on a bigger scale**"*

Data collected by BIT on 11 November - 13 December 2022.

Intent.

The top reasons for not considering a digital course/career are: having already decided what to do, lack of interest, not having the right education.

Of those who would not consider applying for a digital university course or apprenticeship/a digital career, % who would do so because… (n = 816 / 559)



9% of people wouldn't consider applying for a digital university course or apprenticeship because the **university they want to go to doesn't offer digital courses** and 6% because they **don't own a computer or good equipment**.

15% of people wouldn't consider a digital career because it **doesn't involve helping others, and working with people** and 7% because **there aren't many digital jobs in their area**.

*"I **studied programming** in high school for 3 whole years and **it's not my thing**."*
*"I'm **not super skilled** with technology"*
*"It takes **too much work gaining a platform**, **intimidating** and the **anonymity is not appealing**"*

Descriptives only. Not tested for significant differences to limit comparisons and reduce the likelihood of reporting false positives. Data collected by BIT on 11 November - 13 December 2022.

Intent.

The top-rated courses were game design, digital media and digital marketing. The top-rated apprenticeships were digital marketer, business analyst and software tester.

Of those who would consider applying to a digital university course or apprenticeship… (n = 1,439)

% who said this digital university course sounds interesting

Top 5 selected courses

% who said this digital apprenticeship sounds interesting

Top 5 selected apprenticeships

Full list of university courses and apprenticeships in Appendix.
Data collected by BIT on 11 November - 13 December 2022.

Intent - A/T level or equivalent students.

Amongst A/T level or equivalent students who think a digital university course would provide a wider range of opportunities than other courses

- 76% think a digital course would provide a wider range of opportunities than a **business course**
- 70% than a **maths or engineering course**
- 63% than **another science course**
- 62% than a **social science course**

Intent - University students or recent graduates.

92% of university students and recent graduates said they would consider retraining for a digital career. Of these

- 40% would consider doing so through a **training course or bootcamp**
- 28% would consider doing so through a **university degree** (e.g. masters programme)
- 13% would consider doing so **another way** (e.g. an apprenticeship).
- 11% would consider doing so through a **university qualification** (e.g. conversion course)

Results indicate intent to consider retraining for a digital career.

We observed greater interest from people who had received free school meals

% who would consider a digital university course or apprenticeship or career

78% of people who have ever received free school meals say they would consider a digital university course or apprenticeship or career

Compared to 66% who have never never received free school meals

Intent.

Men were far more interested in digital university courses or apprenticeships or careers than women, 'Sector availability' message shrunk this gender gap.

% who would consider a digital university course or apprenticeship or career		Control (n = 510)	Sector availability (n = 514)
Gender	Male (n = 2,105)	84%	78%
	Female (n = 2,391)	62%	70%

There was a fairly consistent gap between male and female participants in intent to consider a digital university course or apprenticeship or career, of ~20pp. However, the 'Sector availability' message shrunk this gap to 8pp, with 70% of women saying they would consider a digital career after seeing this message, compared to 78% of men.

Qualitative insights on the messages

*"**Provides examples** on the types of job roles available in different industries. "Language used is quite **casual so it's more relatable**."*

*"**Could talk more into the job sector, the pay range** of the jobs mentioned, if you have continuous training to keep updated on all new information. Could also go into **more detail about the jobs she's been in**."*

*"[...] prompts listener/reader to **go out of their way and research more**."*

*"I think that it **has just the right amount of information**. The important bold message is very **eye catching and lists all of the essentials** that would be good to grab people's attention right off the bat."*

*"**How can a digital course allow you to switch jobs**?"*

*"I think it's very persuading and gives a insight that **a digital career isn't as daunting as some people make it out to be**."*

2. Key takeaways and recommendations

Target A/T level or equivalent students in future communications. A/T level or equivalent students were less interested in digital courses or apprenticeship to begin with, but most of the messages were effective in increasing their intent to apply. This could be particularly valuable for boosting digital course uptake and digital skill levels early on. It is equally possible that this group's interest in digital careers may grow naturally as they progress through their studies (to reach the higher levels we saw among university students/graduates).

Explore other framings or non message-based interventions for university students / graduates as none of the messages tested for this age-group performed significantly better than seeing no message at all.

When considering messaging around digital courses or careers, there is value in a targeted approach. Most messages seemed to work for A/T level or equivalent students. We suggest that the 'Sector availability' framing should be used when targeting women as we found that it (i) was among one of the best performers in terms of women's intent to apply for a digital course/career, and (ii) reduced the gap in intent between men and women from on average over 20pp to 8pp. Further communications could test the effects of the industries mentioned. One reason the 'Sector availability' message might have worked well for women is that two of the three sectors mentioned are already female-dominated (healthcare and fashion). Changing the sectors mentioned in other messages, for example the 'Testimony' message, which was also effective, could also work to boost women's interest in digital courses and careers.

Make clear how digital skills can fit in with existing interests. 1 in 2 people who said that they would not consider a digital university course or apprenticeship or career said that they would not do so because they already know what they want to do. As such, explaining how digital skills could enhance their prospects in careers they are already interested in or planning to go into could boost interest.

2.2. Background and methodology

THE BEHAVIOURAL INSIGHTS TEAM

Background.

This trial aims to help DSIT identify messages that boost uptake of digital courses / careers.

Background: The UK has a significant digital skills gap. The Department for Culture, Media and Sport (DCMS) wants to reduce this gap. DSIT commissioned BIT to improve communications to boost uptake of digital courses, apprenticeships and careers among **A/T level or equivalent students** **and** **university students and recent graduates**. DSIT are also interested in messaging that might appeal to women and girls.

Key purpose of the online trial: Identify which message(s) would maximise uptake of digital university courses or apprenticeships and careers.

Methodology.

We recruited a sample of 4,548 A/T level or equivalent students and university students and recent graduates in England.

BIT worked with DSIT to test the effects of messages on intent to take up a digital course or career (plus comprehension and sentiment for these messages) on an online representative sample of 4,548 A/T level or equivalent students and university students and recent graduates in England from 11 November to 13 December 2022.

NOTE ON INTERPRETING RESULTS

1. The sample doesn't capture the digitally excluded, or people not inclined to complete online surveys.
2. Just because people say they would do something in an online experiment doesn't mean they always will in real life. We therefore interpret stated intent as a likely upper bound of real behaviour.
3. When we examine differences by subgroup (e.g. gender, ethnicity), we only do so when the sample size remains large enough to draw robust inferences.

Gender	
Women	53%

Age group	
A/T level or equivalent students	50%
University students and recent graduates	50%

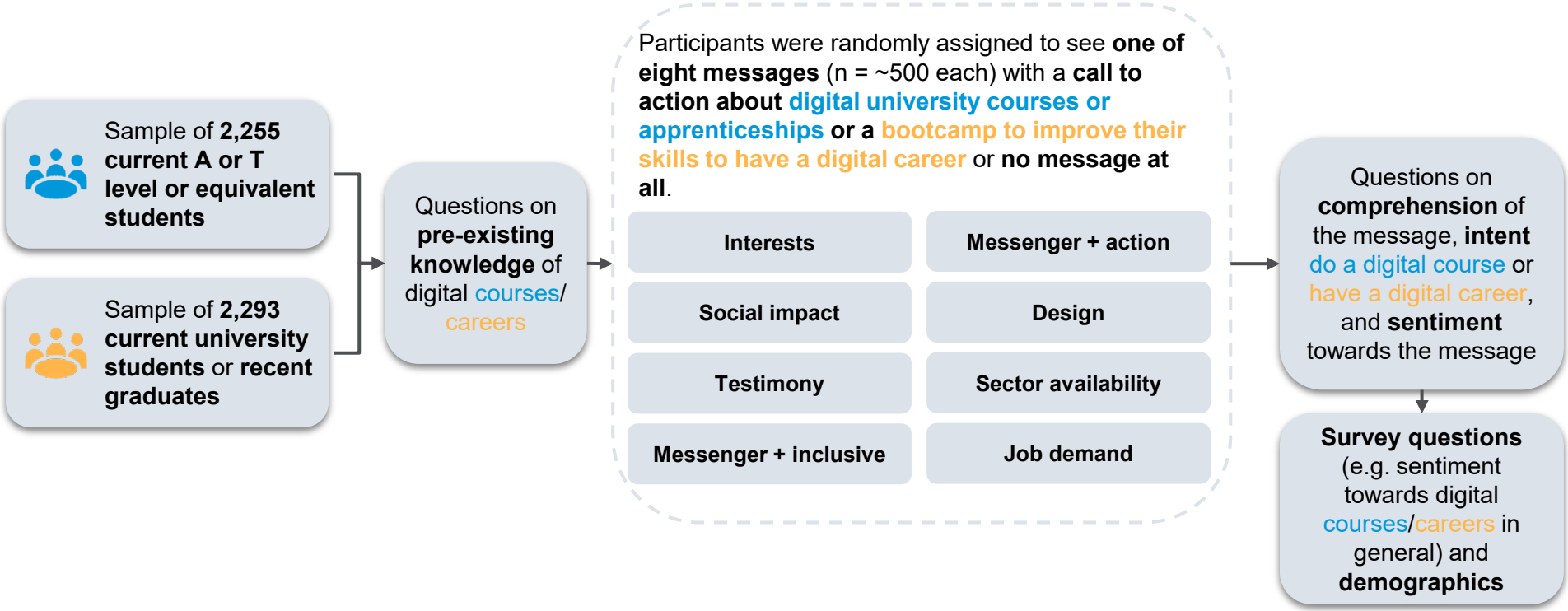
Region	
South & East	30%
North	24%
Midlands	20%
London	26%

Ethnicity	
White	73%
Asian	16%
Black	6%
Mixed / other	5%

Median time spent completing survey: 6m 15s
Also collected data for all respondents for courses studying/studied, whether their parents or carers went to university, whether they have ever received free school meals, school type, disability and employment.

Methodology.

Participants were randomly assigned to see one of eight messages about digital courses or careers, or nothing at all. They then answered questions on comprehension, intent and sentiment.



Methodology.

Participants were randomly assigned to see one of eight messages and a call to action relevant to their age group, or no message at all (n = 273/237).

Interests	My favourite subject at school was music. Now I decide what song plays next.	N = 212/256 MVT = 10s/10s
Social impact	Some organisations house the homeless, some fight for equal rights, and some advocate for refugees. **To do so, they all need people with digital skills**. Digital careers can help you help others.	N = 258/259 MVT = 11s/9s
Testimony	*"One of the cool things about doing a digital **subject**/career is that your skills are needed in pretty much every sector, so you have opportunities across the board with all kinds of teams. I've done sustainability, research, banking and psychology"* Ilsa, 27 years old.	N = 232/265 MVT = 11s/11s
Messenger + inclusive	*"Part of what made the Apple Mac computer great was that the people working on it were musicians, poets, artists, zoologists, and historians. They also happened to be the best computer scientists in the world"* Steve Jobs	N = 245/275 MVT = 12s/11s
Messenger + action	As Barack Obama said: *"Don't just buy a new videogame. Make one. Don't just download the latest app. Help design it. Don't just play on your phone, programme it".*	N = 258/230 MVT = 12s/11s
Design	Whether it is Netflix, TikTok, Spotify or Twitter, our daily lives are made up of digital experiences. With a digital career, **you could be the one who designs them**.	N = 268/250 MVT = 10s/10s
Sector availability	Imagine starting out your career in healthcare, switching to fashion and then trying out investment banking. **With a digital career, you can.**	N = 253/261 MVT = 9s/10s
Job demand	**Digital roles are #1 in the UK for most job opportunities**. Whether it's healthcare, fashion, journalism or sports, digital careers open the door to all kinds of exciting, creative and highly-paid opportunities.	N = 256/260 MVT = 9s/8s

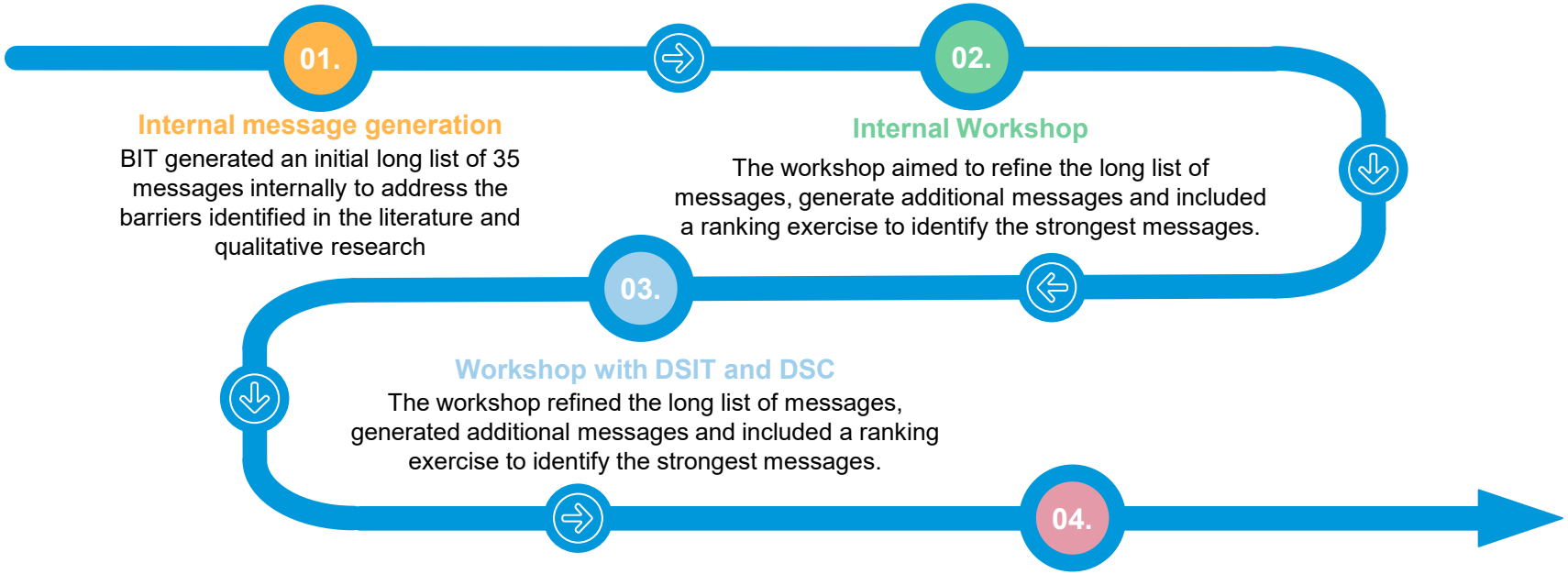
Click here to learn more about digital university courses and apprenticeships.

Click here to learn more about digital Skills Bootcamps - government-funded courses which allow you to gain digital skills employers are looking for.

MVT = Median viewing time
Data collected by BIT on 11 Nov - 13 Dec 2022.

Methodology.

The eight messages and call to action that participants were randomly assigned to see were selected by DSIT.



2.3. Experimental results

THE
BEHAVIOURAL
INSIGHTS
TEAM

A/T level or equivalent students
University students or recent graduates

Intent.

Men were far more interested in digital university courses or apprenticeships or careers than women, but the 'Sector availability' message shrunk this gender gap.

None of the messages performed statistically significantly better than the 'No message' arm. Some messages ('Interests', 'Messenger + action' and 'Design') backfired, meaning statistically significantly fewer people would consider a digital university course or apprenticeship or career after seeing these messages, compared to not seeing any message.

% who would consider a digital university course or apprenticeship or career		No message (n = 510)	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Overall		72%	62%	72%	74%	71%	63%	66%	74%	74%
Gender	Male (n = 2,105)	84%	75%	84%	85%	81%	76%	79%	78%	84%
	Female (n = 2,391)	62%	52%	61%	62%	60%	53%	56%	70%	66%

78% of people who have ever received free school meals say they would consider a digital university course or apprenticeship or career compared to 66% who have never received free school meals.
They were also more popular in London (75%) than the Midlands (70%), South and East (68%) and North (66%).

There was a fairly consistent gap between male and female participants in intent to consider a digital university course or apprenticeship or career, of ~20pp. However, the 'Sector availability' message shrunk this gap to 8pp, with 70% of women saying they would consider a digital career after seeing this message, compared to 78% of men.

SECTOR AVAILABILITY
Imagine starting out your career in healthcare, switching to fashion and then trying out investment banking.
With a digital career, you can.

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for region, ethnicity, socioeconomic status (whether they've received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Intent - A/T level or equivalent students.

Overall, 6 in 10 A/T level students were interested in taking a digital course. All messages except 'Interests' & 'Messenger + action' boosted interest.

Students who are **currently studying a digital A level** (Computer Science or Information Technology) **or T level were significantly more likely to consider a digital university course or apprenticeship** (87%) than those who aren't (50%).

Of A/T level or equivalent students, % who…	No message (n = 273)	Interests (n = 212)	Social impact (n = 258)	Testimony (n = 232)	Messenger + inclusive (n = 245)	Messenger + action (n = 258)	Design (n = 268)	Sector availability (n = 253)	Job demand (n = 256)
would consider applying to a digital university course or apprenticeship	61%	55%	67%	65%	65%	58%	64%	71%	67%
think others would consider applying to a digital university course or apprenticeship	89%	81%	90%	88%	83%	86%	83%	89%	88%
clicked a link to find out more about digital university courses and apprenticeships	4%	12%	9%	6%	10%	8%	9%	9%	8%
think a digital university course would provide a wider range of opportunities than other courses	62%	64%	62%	67%	64%	61%	61%	63%	63%

76% think a digital course would provide a wider range of opportunities than a **business course**, **70%** than a **maths or engineering course**, **63%** than **another science course** and **62%** than a **social science course**.

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, and socioeconomic status (whether they've ever received free schools meals or not).
Data collected by BIT on 11 November - 13 December 2022.

Intent - University students or recent graduates.

Interest in a digital career was already high among university students and graduates. None of the messages boosted interest compared to no message.

University students and recent graduates who are **studying/ studied a digital course (Computer science or software engineering or Game design) were significantly more likely to consider a digital career** (95%) than those who did/are not (72%).

Of university students or recent graduates, % who…	No message (n = 237)	Interests (n = 256)	Social impact (n = 259)	Testimony (n = 265)	Messenger + inclusive (n = 275)	Messenger + action (n = 230)	Design (n = 250)	Sector availability (n = 261)	Job demand (n = 260)
would consider a digital career	85%	67%	76%	82%	76%	68%	68%	76%	81%
think others would consider a digital career	94%	83%	92%	93%	89%	89%	90%	93%	92%
clicked a link to find out more about government bootcamps to gain digital skills	5%	15%	9%	6%	7%	6%	12%	8%	8%
would consider retraining for a digital career (if they would consider a digital career, n = 1,734)	95%	92%	90%	89%	89%	95%	92%	93%	89%

40% would do so through a **training course or bootcamp**, 28% would do so through a **university degree** (e.g. masters programme), 11% would do so through a **university qualification** (e.g. conversion course), 13% would do so **another way** (e.g. an apprenticeship) and 9% don't know or would not consider retraining.

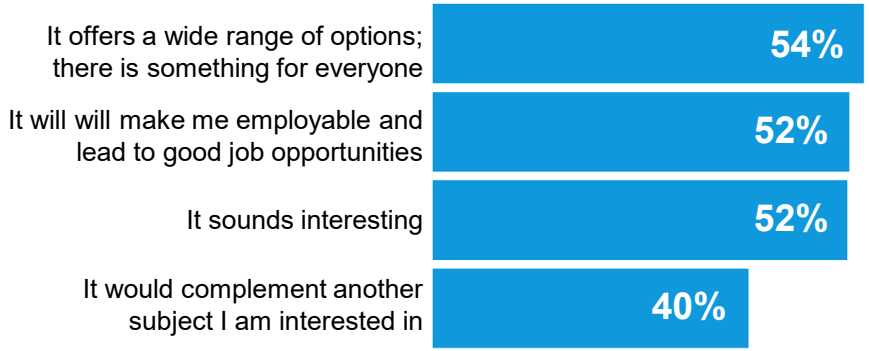
Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, and socioeconomic status (whether they've ever received free schools meals or not).
Data collected by BIT on 11 November - 13 December 2022.

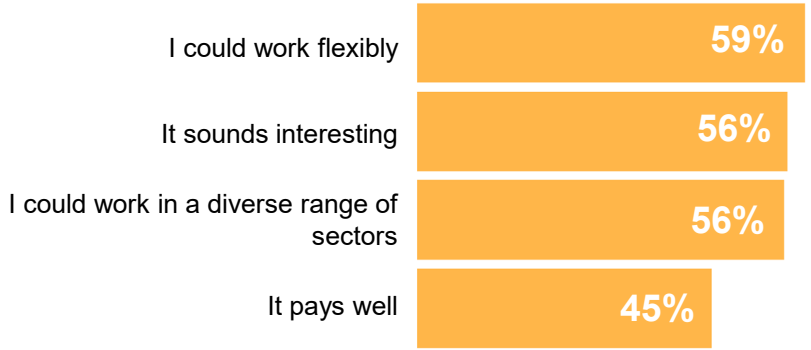
Intent.

A/T level or equivalent students
University students or recent graduates

The top reason for considering a digital course or apprenticeship is the wide range of options offered. The top reason for considering a digital career is that it allows you to work flexibly.

Of those who would consider applying for a digital university course or apprenticeship/a digital career, % who would do so because… *(n = 1,439 / 1,734)*





34% of people would consider applying to a digital course or apprenticeship because they **know someone who has the same job they want**, 32% because it **sounds important**, 31% because it's **similar to what they're already studying** and 23% **already applied**.

Other free text responses: *"I work in Games Design course and as much as we have a lot of work to do it **continually inspires me and resparks that motivation I have to make a game that can make people happy**"*
*"It will **increase my chances at finding a job** in the future **with the increasing technological advances**"*

35% of people would consider a digital career because it **would challenge them**, 29% because it's **similar to what they are studying/studied** at university, 29% because it **sounds important**, 27% because they **know someone who enjoys their digital career**.

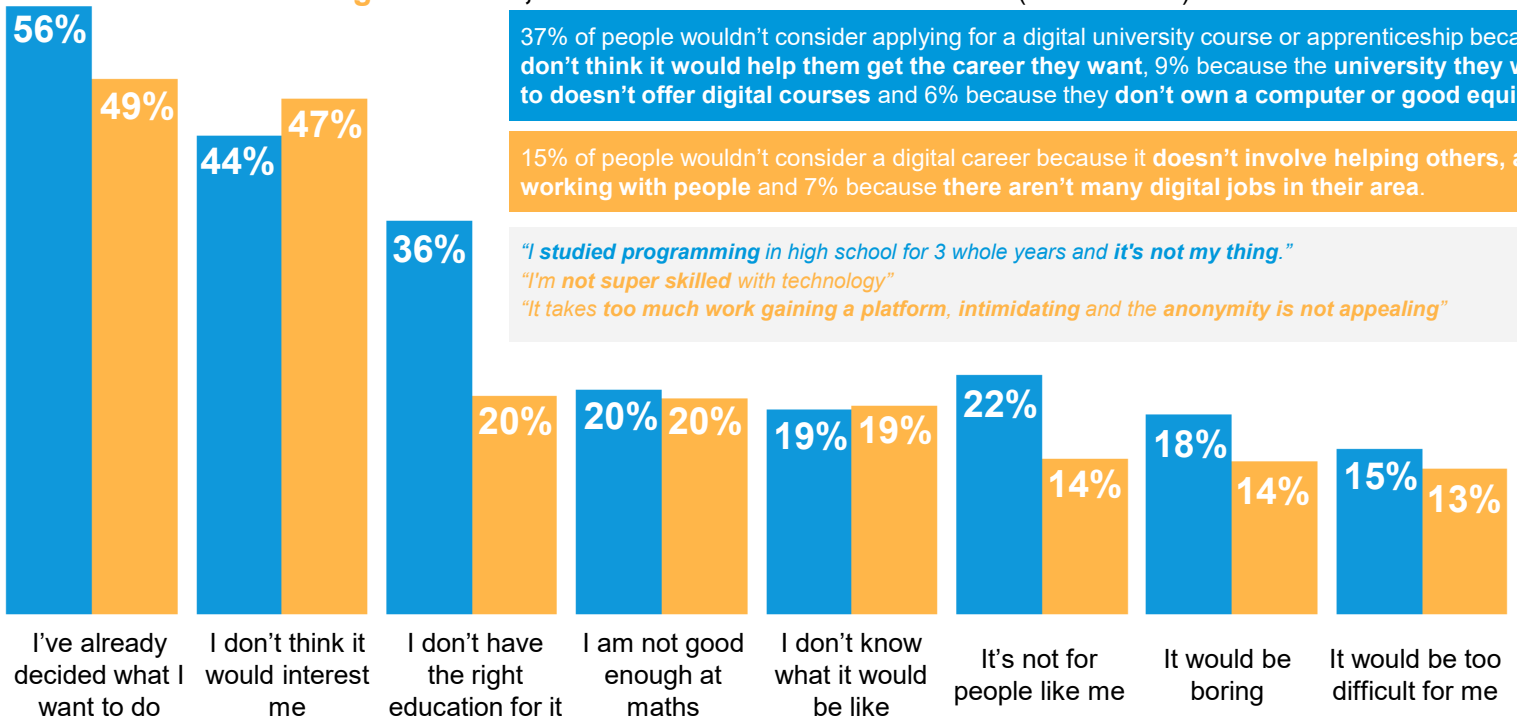
Other free text responses: *"I could **look into careers sustainability-wise and contribute to society around me**"*
*"It feels **relevant in an increasingly digital world**"*
*"It's **futureproof**"*
*"Opportunities to **see your work on a bigger scale**"*

Data collected by BIT on 11 November - 13 December 2022.

Intent.

The top reasons for not considering a digital course/career are: having already decided what to do, lack of interest, not having the right education.

Of those who would not consider applying for a digital university course or apprenticeship/a digital career, % who would do so because… (n = 816 / 559)



37% of people wouldn't consider applying for a digital university course or apprenticeship because they **don't think it would help them get the career they want**, 9% because the **university they want to go to doesn't offer digital courses** and 6% because they **don't own a computer or good equipment**.

15% of people wouldn't consider a digital career because it **doesn't involve helping others, and working with people** and 7% because **there aren't many digital jobs in their area**.

*"I **studied programming** in high school for 3 whole years and **it's not my thing**."*
*"I'm **not super skilled** with technology"*
*"It takes **too much work gaining a platform**, **intimidating** and the **anonymity is not appealing**"*

Descriptives only, not tested for significant differences. Data collected by BIT on 11 November - 13 December 2022.

Intent.

The top-rated courses were game design, digital media and digital marketing. The top-rated apprenticeships were digital marketer, business analyst and software tester.

Of those who would consider applying to a digital university course or apprenticeship… (n = 1,439)

% who said this university course sounds interesting

Top 5 selected courses

% who said this apprenticeship sounds interesting

Top 5 selected apprenticeships

Full list of university courses and apprenticeships in Appendix.
Data collected by BIT on 11 November - 13 December 2022.

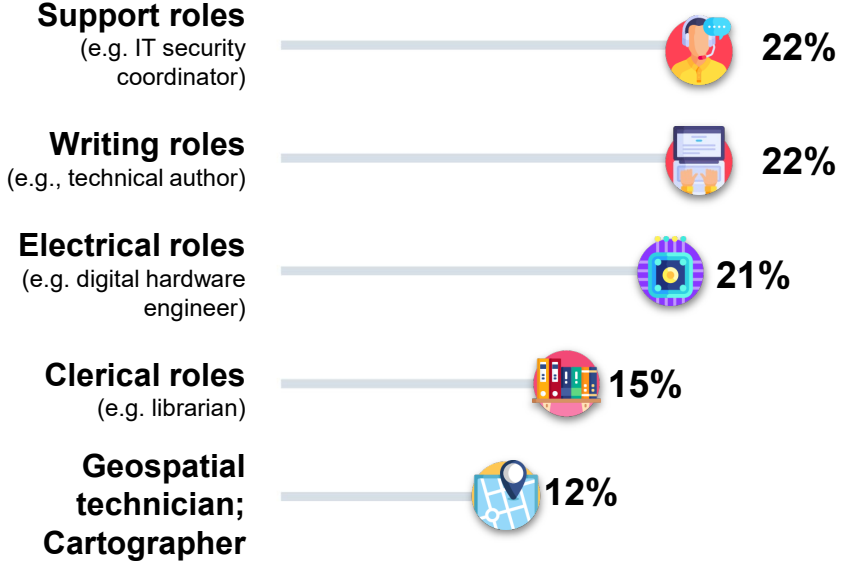
A/T level or equivalent students
University students or recent graduates

People who would consider a digital course or career were most interested in content, gaming or data or analytical roles. They were least interested in geospatial technician/cartographer or clerical roles, perhaps due to a lack of familiarity.

Of those who would consider applying to a digital university course or apprenticeship/having a digital career, % who said this job role sounds interesting (n = 3,173)

Top 5 selected job roles

Bottom 5 selected job roles



Full list of job roles in Appendix.
Data collected by BIT on 11 November - 13 December 2022.

Comprehension.

The ‘Testimony’ message performed best in terms of comprehension.

The ‘Testimony’ message performed significantly best for all demographic subgroups.

	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Overall comprehension score (average of whether they correctly recalled that the message was about digital university courses and apprenticeships or careers and whether they recalled the benefit mentioned in the message)	50%	64%	74%	50%	70%	66%	57%	68%

67% correctly recalled that the **message was about digital university courses and apprenticeships or careers**.

57% correctly recalled the **benefit mentioned** in the message.

Breakdown by message is in the Appendix.

TESTIMONY

*"One of the cool things about doing a digital **subject/career** is that your skills are needed in pretty much every sector, so you have opportunities across the board with all kinds of teams. I've done sustainability, research, banking and psychology"* Ilsa, 27 years old.

Green shading identifies statistically significantly highest (or joint highest) value within row, $p < .05$.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Sentiment towards the messages was mixed.
7 in 10 thought the message was trustworthy and made digital courses/careers seem accessible and achievable, but only 1 in 2 thought the message was relevant to them.

	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Overall sentiment score (average of the four items below)	61%	67%	67%	66%	69%	65%	65%	67%

74% think the message makes a digital university course or apprenticeship/career sound **accessible and achievable**.

71% think it is **trustworthy**.

63% think it has the **right amount of information**.

55% think it is **relevant** to them.

Breakdown by message is in the Appendix.

60% of men thought the message was relevant to them compared to **40% of women**.

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Interests

My favourite subject at school was music. Now I decide what song plays next

From A/T level or equivalent students

*"**Demonstrated the advantages** effectively."*

*"A little **confusing because it's very short**."*

*"It's a bit **ambiguous**. Should be clearer about **how you decide what song plays next**. Needs to be **easier to decide if it is relevant to the reader otherwise they will dismiss it**, even if it is relevant to them."*

*"It's **short and gets straight to the point**, keeps attracting attention."*

*"It **doesn't really make much sense**. I **don't associate it with promoting an online university course** at all..."*

*"I feel like it **needs something that would make me more interested** in finding out **rather than music as it's not something I'm interested in** as a subject."*

*"I feel **if it gave a more broad way the course could be helpful** then more people might be interested."*

From university students or recent graduates

*"It was **straightforward and easy to understand** which **makes it interesting**."*

*"**Might only apply to music students**."*

*"**Too vague. Give a way to do this**. For example: an apprenticeship."*

*"It could be **more specific on what kind of digital careers** it could be included."*

*"I worry that a **government funded course would be too limited to apply to most**. For example, only those without a degree, under 19 etc. Perhaps **a mention about those who could apply would be useful.**"*

*"Picking what song plays next is a **pretty standard thing to do so it's not that impressive**. If it was something like "I used to love listening to the radio (or equivalent), now I get to choose what songs play next on my favourite station" that would be more attention grabbing."*

*"Seems very **vague and generic**. Could use **more specifics and maybe a human element**?"*

*"Give **more information on the types of skills** available before showing the links."*

*"Use **statistical data to show how digital bootcamps can help** one succeed."*

*"It **doesn't really explain what a digital career is** - it **grabbed me as a musician but then lost me**."*

*"The sentence "Now I decide what song plays next" **does not make sense**."*

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Social impact

Some organisations house the homeless, some fight for equal rights, and some advocate for refugees. **To do so they all need people with digital skills.**
Digital careers can help you help others.

From A/T level or equivalent students

*"**Informative**."*
*"It needs to be **more specific to common life jobs and situations**."*
*"No it's amazing and well presented. Definitely **made me question my choices."***
*"Maybe an **explanation to the different job roles** and a brief summary of what they do would like be great to compare."*
*"Doesn't explain much about **how you can get into a digital course**, you mostly **need qualifications that some people won't be able to obtain."***
*"The message **doesn't really inspire me** into wanting to do digital course as the words used are quite **basic and a bit monotonous**."*
*"It's a **great insight into how it can help and build people's skill** to help get more opportunities."*

From university students or recent graduates

*"Maybe **elaborate about what type of organisations** even if it's only a few examples."*
*"**Doesn't explain how digital careers correlate** with homeless people and refugees."*
*"More information about **what kind of digital roles** will help other people and **what it entails**."*
*"Not really sounds good to me **if it can help other people then I'm willing to do it."***
*"It does feel **slightly persuasive by only talking about charity-oriented organisations - maybe include a variety**. E.g. "Some organisations protect local businesses, some keep the lights on, and some help people find the right job for them.""*
*"I **don't think the first sentence makes much sense or explains the relevance** to the main message."*
*"They could've elaborated the message in **more detail such as exactly what you will be doing."***
*"It's positive and **makes digital careers seem ethically good."***
*"Needs to **define a digital career more clearly."***

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Testimony

*"One of the cool things about doing a digital **subject/career** is that your skills are needed in pretty much every sector, so you have opportunities across the board with all kinds of teams. I've done sustainability, research, banking and psychology"* Ilsa, 27 years old

From A/T level or equivalent students

*"I think **language such as 'pretty much' is too informal to sway my opinion** on digital university courses."*

*"I believe it **reinforces the use of digital media in a range of subjects** that others may not be aware of."*

*"It could add **more potential benefits** to doing a digital course."*

*"**Expanding just a tiny bit more so the reader knows more about the course** in a little more detail."*

*"Yes, It kind of **gives me an idea on what it's like.**"*

*"It's good as a message describing Ilsa's experience, but **not enough in isolation to sufficiently explain the subject**. It would have to be **used in tandem with significantly more detailed information**."*

From university students or recent graduates

*"Very **straightforward and easy to read**."*

*"**Provides examples** on the types of job roles available in different industries. "Language used is quite **casual so it's more relatable**."*

*"**Could talk more into the job sector, the pay range** of the jobs mentioned, if you have continuous training to keep updated on all new information. Could also go into **more detail about the jobs she's been in**."*

*"The message **doesn't really go into depth about how easy or how challenging** the career."*

*"Maybe **illustrate how she's learned these skills**."*

*"The **specific degree or qualifications needed** to have a digital career."*

*"The message **doesn't really go into depth about how easy or how challenging the career is."***

***"Why age?** Not I've been working here for 5 years."*

*"It's really simple, clear and concise which is **perfect for accessibility."***

*"There is **no factual information. The message is based on personal opinion.** Furthermore the person is also of a young age. The message **may feel more trustworthy coming from someone older with more experience."***

*"Ilsa has **no listed information other than her age, making the source of the information feel unclear."***

*"I think the **way it is worded is very helpful**, I often hear digital careers and **get put off thinking that it all means you need a massive IQ and previous experience** and it is all very technical and sat at a screen for hours but now **I am rethinking that because of this message**."*

*"Certainly **gets a relevant point across**. But probably **not massively attention-grabbing. Particularly younger audiences whose appeal might be captivated more by earning potential and job excitement."***

*"She **should include what roles she's worked on within these different sectors** to give the readers a broader idea."*

*"It **does not specify any example so it's hard to visualise** exactly what this could include, **some people may not understand or know without a example**"*

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Messenger + inclusive

> *"Part of what made the Apple Mac computer great was that the people working on it were musicians, poets, artists, zoologists and historians. They also happened to be the best computer scientists in the world"* Steve Jobs

From A/T level or equivalent students

*"The message seems **relevant and important to its target audience**."*

*"They gave a **much needed reality check to potential students about what future jobs will be** and demand as well as data to support that."*

*"I think **because it quotes such an influential person it's very memorable."***

*"The message **could have more detail and explanation on how a job role in digital media could benefit me** and **what I would achieve as a result of taking this course."***

From university students or recent graduates

*"It's **engaging** and **interesting**."*

*"I think it is a very good message as it is **comforting and important**."*

*"I think the message is a little **confusing to read at first**, but after a few reads it makes sense. It **may be due to there being one large paragraph**, rather than separating it to make it easier to read."*

*"Should **go more into what can be done to begin** a digital career."*

*"**Name the different people** behind their roles to **make the message more human and relatable**."*

*"It is a **little bit complicated**, **not everybody will easily understand the message** behind it."*

*"After the bit 'historians' it **should include something like how it helps to encourage people** and link it to the audience type."*

*"Just the **right amount of information** and has a **good motivation."***

*"The message **could indicate how they were able to work on Apple** alongside their normal jobs."*

*"The message is **very positive about digital careers**, however, **from personal experience, it is a hard career to get into with little experience** - therefore the **importance of experience in digital careers is something that may need to be stated."***

*"I feel like the Steve Jobs quote was **distracting because it doesn't say much about the message** of digital jobs."*

*"Musicians, poets, artists etc are **all quite middle class jobs**. I think the ad **should appeal to everyone not just people in the type of jobs listed."***

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Messenger + action

As Barack Obama said: *“Don’t just buy a new videogame. Make one. Don’t just download the latest app. Help design it. Don’t just play on your phone, programme it”.*

From A/T level or equivalent students

*“**Not enough information** about digital careers.”*

*"A **very positive outlook** - **encourages those in doubt** to take the leap"*

*"It's rather ambiguous; **while it may be clear to some as being a sign that digital university courses are the way to go, others may interpret it as generic motivation to "get involved" with things** - not necessarily just computing."*

*"It doesn’t t**ake into account the difficulty gap in using and creating**"*

*"I think it's very **insightful** which would allow people to **see what exactly it would mean to take computer science or software engineering etc in university**"*

From university students or recent graduates

*“I like the quote, it **feels inspiring regardless as to whether you are looking at it from a digital perspective or not**.”*

*“It seems like a good message from an **iconic figure who is easily recognisable**.”*

*“[...] prompts listener/reader to **go out of their way and research more**.”*

*“I think its **precise and to the point**, understandable and clear.”*

*“To use **examples that target all age ranges**.”*

*"It's **politically minded, which makes it more effective for one demographic but cuts off another** completely"*

*"I think this message is **quite inspiring**, it shows that **behind every product, whether it be video game or phone, there's an engineer behind it, and it could be you**."*

*"It's a vague message that **promises a lot of people**"*

*"I like it, it's **quite inspirational but just not relevant** to me"*

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Design

Whether it is Netflix, TikTok, Spotify or Twitter, our daily lives are made up of digital experiences. With a digital career, **you could be the one who designs them**

From A/T level or equivalent students

*“Not really but I think it’s quite good because **the apps listed are everyday apps that almost everyone has**.”*

*“I think the **message makes it seem like a digital career is more about web development and design** rather than computer science, software engineering etc.”*

*"Many people have **negative connotations to some of the platforms mentioned, such as Twitter**. It may be beneficial to **use different examples**."*

*"It **sounds corny** and does not really get students interested. People’s main concern is their career not creating TikTok.”*

From university students or recent graduates

*“It's short and snappy and **gets straight to the point**.”*

*“Maybe a **little more emphasis on the digital career** would've been nice.”*

*“It could **give examples** of what kind of jobs are available.”*

*"**Boosting your skills doesn't mean you'll get a job** in that field. Sometimes doing the work yourself independently is more valuable"*

*"Not sure if it is appealing to people when the message sort of refer to Netflix, Twitter etc. **Digital careers seems to encompass much more than this**."*

*"It **could do with sounding accessible**, like it's open to anyone"*

*"The message was **inviting to all people regardless of their background** and it was **really relevant to some of my current interests**."*

*"Short snappy and to the point and **really makes you realise how accessible digital careers actually are**."*

*"I felt the **information didn't reflect what it was trying to convey**. **I didn't get digital career from the info I read on the Gov website. Instead I just got training opportunity**."*

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Sector availability

Imagine starting out your career in healthcare, switching to fashion and then trying out investment banking.
With a digital career, you can.

From A/T level or equivalent students

*"**How can a digital course allow you to switch jobs**?"*
"The information is concise but could do with a bit more"
"It's very niche, I don't think it would apply to much applicants"

From university students or recent graduates

"Clear and concise"
*"It was succinct and **to the point**. Displays message and gets point across."*
*"It's good and **I feel like I can compare myself to this"***
*"I think that **it has just the right amount of information**. The important bold message is very **eye catching and lists all of the essentials** that would be good to grab people's attention right off the bat."*
*"It's **not so clear what a digital career is**."*
*"Healthcare, fashion and investment banking are **perhaps too specific to apply to that many people**, as not many work in these industries or want to."*
*"It is good but **only suits a certain type of personality** ie those who like change within their career."*
*"Could be **interpreted as not having job security**."*
*"I think it's a good **step in the right direction, with IT and Digital working becoming more commonplace** it's a good idea to advertise it more to people. "*
*"Give some **more information on how to convert** to a digital career"*
*"Messages like that sound like quick fixes and they never are - **more sits behind what you need to do to achieve them**"*
*"**Expand on how it's achievable** not what product/service is offered"*
*"It **suggests switching careers is simple-even in a digital climate of work, to completely change careers would in fact require one of these courses** - it **doesn't demonstrate the benefit of each individual course**"*

Data collected by BIT on 11 November - 13 December 2022.

Sentiment.

Free text feedback suggests that while people liked the messages, they wanted to see more information about digital university courses or apprenticeships or careers, and how the theme relates to the job roles available.

Job demand

Digital roles are #1 in the UK for most job opportunities. Whether it's healthcare, fashion, journalism or sports, digital careers open the door to all kinds of exciting, creative and highly-paid opportunities

From A/T level or equivalent students

*"I think it's very persuading and gives a insight that **a digital career isn't as daunting as some people make it out to be**."*

*"Maybe write **how beneficial is to the person**. And **write for who you're targeting** rather than just a message"*

*"Add **more statistics than just saying it's #1 to provide evidence** for how useful the skills learned will be"*

*"There is **no evidence to back up the claim** presented in the statement"*

From university students or recent graduates

*"Its gives **good range of jobs** that involve digital things."*

*"It's an eye-catching message with **concise information and clear highlighting to help me with navigating to the links**."*

*"It's **kind of bland**. **I would only read the text in bold** and then not bother reading the rest if i was scrolling past it."*

*"I think it's something that would gain clicks, but on the face of it **doesn't give me all I need to know to make a choice**. It needs slightly more detail on jobs."*

*"I **don't like how the first sentence is worded, I think it's worded awkwardly** (for most job opportunities)."*

*"I think the w**ording does not sound massively inviting**, nor does the font and **use of #1 look trustworthy, there are so many scams about**."*

Data collected by BIT on 11 November - 13 December 2022.

2.4. Existing knowledge and attitudes

THE BEHAVIOURAL INSIGHTS TEAM

People generally report that digital courses and careers are about working with IT, computers and data. Marketing and media are coming out stronger as digital careers rather than courses.

When you think of digital courses what kind of subjects do you think of? (n = 2,255)

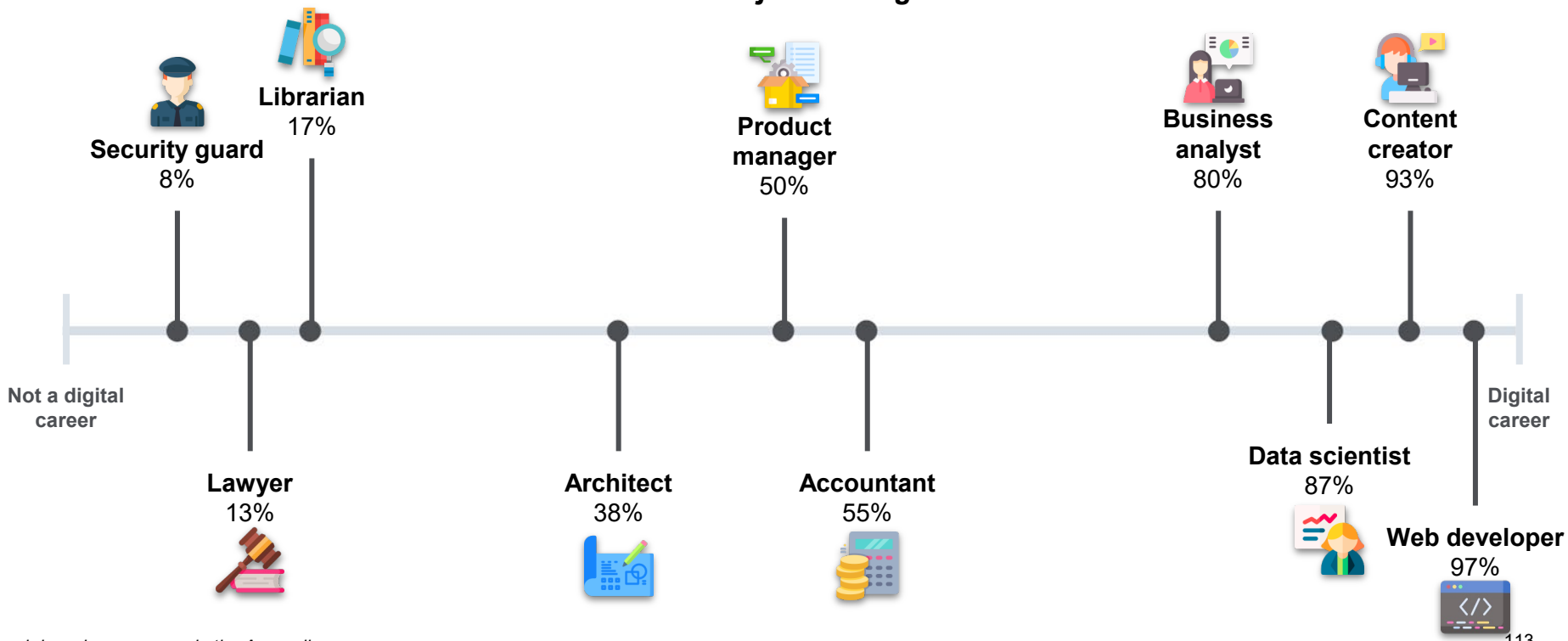
When you think of digital careers what kind of roles do you think of? (n = 2,293)

Data collected by BIT on 11 Nov - 13 Dec 2022.

Pre-existing knowledge about digital courses and careers.

Web developers, content creators, data scientists and business analysts were thought to be the best examples of digital careers.

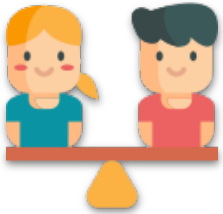
% who think this job is a digital career



Breakdown by age group in the Appendix.
Data collected by BIT on 11 Nov - 13 Dec 2022.

Overall, attitudes towards digital courses and careers were positive. 8 in 10 thought they offer equal opportunities, are creative and rewarding. However, a majority thought they are difficult.

% who think that digital courses and apprenticeships / careers...

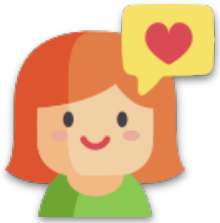


offer opportunities to people of all genders, ethnicities and socioeconomic backgrounds

83%

are creative

80%



are rewarding

80%

are not boring

78%

are not difficult

43%

Data collected by BIT on 11 November - 13 December 2022.

THE BEHAVIOURAL INSIGHTS TEAM

PREDICTIV

Get in touch:

Lal Chadeesingh
Principal Advisor
lal.chadeesingh@bi.team

Bobby Stuijfzand, Principal Research Advisor
Anna Bird, Principal Advisor
Shoshanna Davidson, Principal Advisor
Elena Meyer zu Brickwedde, Associate Research Advisor
Reny Kiryakova, Associate Research Advisor

3. Appendix

THE
BEHAVIOURAL
INSIGHTS
TEAM

Appendix.

Exploratory research: Interview structure

Interview section	Exploratory questions
1. Subject decision-making	• How do students make decisions about their subjects/courses and careers? • What are the main factors affecting the decision-making process?
2. Perceptions of digital subjects and careers	• What do students think about digital subject / job role options? • What are the main advantages and disadvantages of studying a digital subject / working in a digital job role? • What do students imagine the day-to-day of digital job roles to be like?
3. Message testing	• What do students think of the terms ‘digital’, ‘artificial intelligence’ and ‘cyber’? • What do students think of early messaging ideas?

Appendix.

Comprehension breakdown.

% who correctly recalled…	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Overall comprehension score (average of the two items below)	50%	64%	74%	50%	70%	66%	57%	68%
that the message was about digital university courses and apprenticeships/careers	53%	71%	81%	60%	63%	74%	62%	74%
the benefits* of doing a digital university course or apprenticeship/ career mentioned in the message	46%	57%	66%	41%	78%	58%	52%	61%

Of those who didn't see any message, the top benefits for doing a digital university course or apprenticeship or career were that there are many job opportunities (65%), you can create apps and digital products (64%) and skills are needed in all sectors (59%).

* Benefits mentioned:

- There are many available job opportunities that utilise digital skills *(Job demand)*
- Digital skills can be used to help people *(Social impact)*
- Studying a digital subject gives you skills that are needed in pretty much every sector *(Testimony, Sector availability)*
- Digital courses/careers are for everyone *(Messenger + inclusive)*
- Digital skills would enable me to create apps and digital products that others can experience online, rather than just using them yourself *(Interests, Messenger + action, Design)*

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

TESTIMONY

*"One of the cool things about doing a digital **subject/career** is that your skills are needed in pretty much every sector, so you have opportunities across the board with all kinds of teams. I've done sustainability, research, banking and psychology"* Ilsa, 27 years old.

Appendix.

Overall comprehension score by subgroups.

Overall comprehension score		Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Age group	A/T level students or equivalent (n =1,982)	57%	65%	72%	51%	70%	64%	58%	66%
	University students and recent graduates (n = 2,056)	43%	62%	75%	50%	72%	68%	57%	69%
Gender	Male (n = 1,872)	57%	59%	71%	51%	72%	68%	56%	65%
	Female (n = 2,119)	43%	68%	77%	49%	70%	65%	58%	70%
Region	North (n = 995)	47%	64%	74%	44%	69%	64%	57%	68%
	South & East (n = 1,215)	47%	65%	75%	53%	69%	65%	56%	70%
	Midlands (n = 795)	47%	64%	68%	51%	70%	71%	56%	67%
	London (n = 1,033)	61%	62%	76%	53%	73%	66%	59%	64%
Free school meals	Have ever received free school meals (n = 1,229)	52%	62%	68%	51%	71%	66%	57%	67%
	Have never received free school meals (n = 2,625)	48%	66%	77%	51%	72%	67%	58%	68%

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Intent to consider a digital university course or apprenticeship/career by subgroups.

% who would consider a digital university course or apprenticeship or career		No message (n = 510)	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Region	North (n = 1,111)	67%	63%	68%	66%	58%	55%	66%	77%	74%
	South & East (n = 1,366)	71%	55%	69%	76%	71%	60%	60%	71%	74%
	Midlands (n = 901)	72%	66%	73%	77%	77%	58%	67%	72%	73%
	London (n = 1,170)	79%	67%	77%	75%	78%	77%	72%	75%	76%
Free school meals	Have ever received free school meals (n = 1,402)	77%	70%	79%	84%	80%	72%	78%	80%	79%
	Have never received free school meals (n = 2,938)	70%	58%	67%	69%	68%	60%	60%	71%	74%

Green shading identifies statistically significantly highest (or joint highest) value within row, $p < .05$.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Reasons why people would consider a digital university course or apprenticeship.

Of those who would consider a digital university course or apprenticeship, % who would because…	No message (n = 167)	Interests (n = 117)	Social impact (n = 173)	Testimony (n = 150)	Messenger + inclusive (n = 160)	Messenger + action (n = 150)	Design (n = 171)	Sector availability (n = 179)	Job demand (n = 172)
It offers a wide range of options; there is something for everyone	53%	54%	60%	51%	52%	49%	56%	51%	59%
It will will make them employable and lead to good job opportunities	57%	55%	52%	51%	52%	58%	44%	52%	50%
It sounds interesting	49%	50%	47%	56%	53%	49%	55%	55%	53%
It would complement another subject they are interested in	41%	42%	40%	33%	42%	45%	35%	41%	38%
They know someone who did one and has the same job they want	34%	43%	25%	33%	33%	38%	37%	31%	31%
It sounds important	40%	30%	30%	40%	26%	29%	31%	30%	33%
It's similar to what they're already studying	31%	28%	28%	33%	36%	30%	26%	26%	37%
They've already applied	24%	27%	20%	25%	23%	22%	25%	21%	21%

Descriptives only, not tested for significant differences.
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Reasons why people would consider a digital career.

Of those who would consider a digital career, % who would because…	No message (n = 202)	Interests (n = 172)	Social impact (n = 198)	Testimony (n = 216)	Messenger + inclusive (n = 209)	Messenger + action (n = 157)	Design (n = 170)	Sector availability (n = 199)	Job demand (n = 211)
They could work flexibly	60%	52%	52%	64%	59%	57%	55%	64%	65%
It sounds interesting	56%	53%	60%	59%	58%	52%	57%	54%	56%
They could work in a diverse range of sectors	57%	57%	58%	65%	48%	53%	44%	61%	56%
It pays well	50%	38%	43%	43%	41%	48%	49%	44%	46%
It would challenge them	39%	29%	35%	33%	32%	43%	35%	39%	28%
It's similar to what they are studying/studied at university	30%	30%	31%	31%	25%	32%	28%	27%	26%
It sounds important	29%	35%	39%	25%	30%	28%	30%	24%	20%
They know someone who enjoys their digital career	31%	30%	21%	22%	27%	31%	29%	28%	27%

Descriptives only, not tested for significant differences.
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Reasons why people would not consider a digital university course or apprenticeship or career.

Of those who would not consider a digital university course or apprenticeship or career, % who would because…	No message (n = 369)	Interests (n = 289)	Social impact (n = 371)	Testimony (n = 366)	Messenger + inclusive (n = 369)	Messenger + action (n = 307)	Design (n = 341)	Sector availability (n = 378)	Job demand (n = 383)
They already decided what they want to do	47%	46%	57%	55%	56%	46%	51%	63%	58%
They don't think it would interest me	41%	38%	43%	43%	44%	53%	57%	35%	48%
They don't have the right education for it	35%	23%	25%	32%	31%	34%	27%	24%	35%
They are not good enough at maths	27%	15%	19%	23%	20%	23%	16%	15%	26%
They don't know what it would be like	26%	20%	16%	11%	17%	18%	21%	23%	17%
It's not for people like them	16%	21%	15%	20%	29%	15%	15%	15%	22%
It would be boring	16%	12%	18%	24%	16%	16%	12%	16%	20%
It would be too difficult	16%	8%	13%	19%	16%	18%	17%	11%	11%

Descriptives only, not tested for significant differences.
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Reasons why people would not consider a digital university course or apprenticeship or career.

% who would not consider a digital university course or apprenticeship or career because…	No message (n = 369)	Interests (n = 289)	Social impact (n = 371)	Testimony (n = 366)	Messenger + inclusive (n = 369)	Messenger + action (n = 307)	Design (n = 341)	Sector availability (n = 378)	Job demand (n = 383)
They don't think a digital course would get them the career they want (n = 816)	41%	36%	43%	37%	37%	38%	29%	42%	27%
The university they want to go to doesn't offer digital courses (n = 816)	10%	11%	6%	12%	5%	7%	7%	12%	10%
They don't own a computer or good equipment (n = 816)	7%	9%	6%	6%	6%	9%	3%	8%	8%
It doesn't involve helping others and working with people (n = 559)	17%	17%	10%	14%	12%	11%	16%	19%	16%
There aren't many digital jobs in their area (n = 559)	17%	10%	2%	6%	6%	10%	6%	6%	6%

Descriptives only, not tested for significant differences.
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

University courses people find interesting.

41%	Computer games design & development	**30%**	Electronic engineering
40%	Digital media	**28%**	Information technology
39%	Digital marketing	**28%**	Computer networks
36%	Computer science	**28%**	Robotics
36%	Software engineering	**25%**	Biomedical engineering
33%	Visual effects, animation and motion graphics	**1%**	Other (e.g. “Architecture”, “Neuroscience”, “Video Editing within Filmmaking”)
33%	Artificial intelligence	**1%**	Don’t know (exclusive)
32%	Cyber security	**1%**	Would only apply to an apprenticeship (exclusive)
31%	Data science		

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Appendix.

Apprenticeships people find interesting.

35%	Digital marketer	**27%**	Digital and technology solutions professional
33%	Business analyst	**26%**	Digital and technology solutions specialist
33%	Software tester	**25%**	Network engineer
32%	Data scientist	**24%**	Digital community manager
32%	Data analyst	**23%**	Cyber intrusion analyst
31%	Software engineer/developer	**17%**	Unified communications troubleshooter
30%	Project manager	**<1%**	Other (e.g. “Accounting and finance”, “Music business”)
29%	Cyber security technologist	**2%**	Don’t know (exclusive)
27%	Cyber security technical professional	**2%**	Would only apply to a university course (exclusive)

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Appendix.

Careers people find interesting.

39%	Content roles (e.g. social media manager; vlogger; web content manager or editor)	**24%**	Technician roles (e.g. 3D printing or IT support technician)
35%	Computer games developer or tester	**23%**	Robotics roles (e.g. robotics engineer, mechatronics & robotics engineer)
34%	Data and analytical roles (e.g. data scientists, business analyst, data analyst, forensic computer analyst, information scientist)	**23%**	Security roles (e.g. cyber intelligence officer, IT security coordinator, security service personnel)
33%	Design roles (e.g. web or user experience (UX) designer)	**22%**	Support roles (e.g. cyber intelligence officer, IT security coordinator, security service personnel)
31%	Developer or engineer roles (e.g. software engineer/developer, app developer, AI developer, web developer, robotics engineer)	**22%**	Writing roles (e.g. technical author)
30%	Business roles (e.g. systems analyst, solutions architect, technical architect)	**21%**	Electrical roles (e.g. Digital hardware engineer, electronics engineer, semiconductor engineer)
30%	Research roles (e.g. user researcher and operational researcher)	**15%**	Clerical roles (e.g. librarian, library assistant)
28%	Product roles (e.g. digital product manager, digital delivery manager or digital product owner)	**12%**	Geospatial technician; Cartographer
28%	Scientist roles (e.g. AI research scientist, research software engineer, AI healthcare researcher)	**< 1%**	Other (e.g. “Cyber Investigator”, “Video and Clips Editor”, “Videography”, “Architecture roles”)
25%	Engineer roles (e.g. network/ IT support or robotics engineer, database administrator)	**1%**	Don’t know (exclusive)

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Appendix.

Sentiment breakdown.

% who think the message…	Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Overall sentiment score (average of the four items below)	61%	67%	67%	66%	69%	65%	65%	67%
… is trustworthy	69%	74%	74%	70%	76%	67%	66%	71%
… is relevant to them	49%	53%	60%	54%	55%	58%	57%	57%
… made them feel that doing a digital university course or apprenticeship/career is accessible and achievable	69%	76%	74%	73%	74%	74%	76%	75%
… has the right amount of information	56%	66%	59%	67%	71%	59%	61%	65%

Green shading identifies statistically significantly highest (or joint highest) value within row, p < .05.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've ever received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
Data collected by BIT on 11 November - 13 December 2022.

Appendix.

Overall sentiment score by subgroups.

Overall sentiment score		Interests (n = 468)	Social impact (n = 517)	Testimony (n = 497)	Messenger + inclusive (n = 520)	Messenger + action (n = 488)	Design (n = 518)	Sector availability (n = 514)	Job demand (n = 516)
Age group	A/T level students or equivalent (n =1,982)	61%	68%	67%	66%	68%	64%	62%	67%
	University students and recent graduates (n = 2,056)	61%	67%	67%	66%	71%	65%	68%	67%
Gender	Male (n = 1,872)	65%	71%	71%	70%	74%	70%	66%	72%
	Female (n = 2,119)	57%	64%	63%	62%	64%	60%	64%	63%
Region	North (n = 995)	57%	71%	67%	62%	61%	62%	63%	65%
	South & East (n = 1,215)	59%	65%	65%	67%	72%	64%	64%	72%
	Midlands (n = 795)	64%	66%	72%	69%	67%	66%	69%	66%
	London (n = 1,033)	66%	68%	64%	66%	74%	66%	65%	65%
Free school meals	Have ever received free school meals (n = 1,229)	66%	70%	72%	70%	71%	69%	72%	70%
	Have never received free school meals (n = 2,625)	58%	66%	65%	65%	69%	63%	62%	66%

Green shading identifies statistically significantly highest (or joint highest) value within row, $p < .05$.
All regressions are controlled for gender, region, ethnicity, socioeconomic status (whether they've received free schools meals or not) and age group (A-/T-level or equivalent student vs university student/graduate).
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Appendix.

Of the university students and recent graduates in our sample, what subjects did they study/are they studying.

13%	Social sciences, including criminology, psychology, sociology, politics or social work	**2%**	Architecture, building and planning
12%	Computer science or software engineering	**2%**	Classical studies, history, philosophy or theology
8%	Accounting, economics or finance	**2%**	Game design
8%	Creative arts, including fine art, design, film, dance, photography, and music	**2%**	Geography or geology
7%	Business, management and administrative studies	**2%**	Sport
6%	Biological sciences, chemistry, physics or related subjects	**1%**	Agriculture and related sciences
6%	Dentistry, medicine, midwifery, nursing, optometry, paramedic science, pharmacology, physiotherapy, radiography or related subjects	**1%**	Anthropology or archaeology
6%	Law	**1%**	Hospitality, leisure and tourism
4%	Education, teaching	**1%**	Mathematics
4%	Engineering including aerospace, chemical, civil, electrical and electronic and mechanical	**1%**	Veterinary science or zoology
3%	English, journalism or languages	**< 1%**	Food science
3%	Marketing, media studies, publishing or related subjects	**5%**	Other (e.g. “Aesthetics/Beauty”, “Animation”, “Film studies”, “Forensic science”, “Town planning”)

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Appendix.

Of the A/T level or equivalent students in our sample, what are they studying.

Of the 2,255 A/T level equivalent students,

78% are studying A-levels

3% are studying T-levels

11% are studying for another A-/T-level equivalent qualification

9% are doing an intermediate/advanced level apprenticeship

37% of this group (n = 57) **are doing a digital T-level** (Digital business services; Digital production, design and development; Digital support services)

28%	Maths/Further maths
27%	Psychology
25%	Biology
21%	Business studies
20%	Chemistry
17%	Computer science
16%	Sociology
15%	Physics
12%	History
12%	Art and design
11%	Geography
11%	Information technology
10%	Design and technology
9%	None of the above

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