

Evaluation of No_Code Pilot

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Evaluation of No_Code Pilot



Hannes Read, Alice Pugh, Anne Green and George Bramley

City REDI, University of Birmingham

November 2022



Executive Summary

No_Code is a potentially transformative approach to developing computer applications to support new business models by existing businesses and the establishment of new innovative business ventures. It achieves this using programming tools that do not require the user to be expert in coding to develop software applications.

How came about

The No_Code project was designed to align with the needs of the business professional and financial services (BPFS) sector in the region. The Kalifa Review of UK FinTech (2021) identified that emerging next generation services sectors like FinTech are clear routes to growth through jobs and trade for the UK, with selected regions as a key asset in this national opportunity. Birmingham and the West Midlands was recognised as a leading centre. The No_Code project aimed to test approaches that:

- reduce start-up barriers for technology-based businesses, enabling founders/ entrepreneurs to rapid build their business idea and go to market to validate their ambition
- develop digital skills needed by the sector and support entrepreneurial pathways into the sector for young people and unemployed.
- raise awareness amongst existing businesses in the sector about how they can innovate and respond to new challenges and opportunities.

The No_Code project is a programme of activities funded by a successful bid for funding from the Community Renewal Fund (CRF) which provided £220 million in investment in local communities. The Fund's overarching aims were:

[to] help support local areas to pilot imaginative new approaches and programmes that unleash their potential, instil pride, and prepare them to take full advantage of the UK Shared Prosperity Fund when it launches in 2022.

GBSLEP led a consortium that made a successful proposal for £447,575. The consortium included:

- SuperTech, the West Midlands supercluster for next generation services. This is a market-facing industry-led group backed by Business, Professional and Financial Services (BPFS) sector employers including Wesleyan, CBRE, Bruntwood, Shoosmiths, and Nimbus Maps, amongst others, working in partnership with the West Midlands Growth Company (WMGC). The project leveraged key entities and networks to deliver the activities.
- Three education delivery partners including Birmingham Metropolitan College (which is home to the Greater Birmingham Professional Services Academy), Walsall College and Dudley College.
- Million Labs who are the UK's only No_Code based start-up organisation, based in Birmingham. Million Labs supports founders around the globe to leverage the power of No_Code

- in developing their business concepts into income generating applications.
- WMGC – the regional marketing agency responsible for inward investment and the West Midlands' brand/ place proposition. WMGC have provided marketing and comms services to SuperTech since inception as a key asset in strengthening the BPFS sector offer.
- City-REDI at the University of Birmingham, which leads the WMREDI consortium, as independent evaluation partner.

Pilot Design

The pilot comprised a programme of three sets of activities:

No_Code Bootcamps and Associated Training

Activities and course curriculum were designed and delivered virtually requiring Further Education (FE) partners to provide access to a computer, internet connection and meetings platform (e.g. Zoom/ MS Teams) for their students.

The pilot involved the development and piloting of a training curriculum led by an external No_Code training professional, with support from FE nominated educators (tutors) participating as part of their training and providing support to students.

Ideas2App (marketed as SuperTech Seeds)

There was an open application process to invite potential founders and entrepreneurs to submit ideas for a rapid build app. Successful applicants worked with the No_Code development team at Million Labs to build the Minimum Viable Product and enable business launch. This was supplemented by start-up support provided by corporate BPFS community mentors and expert-led workshops.

Hackathon

Existing BPFS businesses were invited to send representatives with an interest in digital product development to a No_Code Hackathon which was based around three challenges. They worked as a team with experienced No_Code developers to rapidly prototype an application around their ideas 'live'. The aim was to show how No_Code can accelerate the innovation journey as 'seeing is believing'.

Evaluation

City-REDI, as part of the WMREDI consortium, of which GBSLEP is also a member, was invited to be included in the CRF application as an independent evaluator for the No_Code pilot. This allowed the adoption of a more developmental and formative approach to the evaluation of the pilot capturing a broad range of impacts and lessons learnt for future interventions. Given the modest scale of the initiative, the short delivery time scale, ethical considerations, and the commitment to creating synergies with, and leveraging, existing provision, it was not feasible or viable to create a counterfactual in the form of control or

comparison group. Methodologically, the evaluation drew on the following evidence sources:

- Documents and management information
- Pre and post training questionnaires for college students administered by the colleges
- Focus groups with college students
- Paired, group and individual interviews with college tutors involved in delivering bootcamps and training
- Observation of a train the trainer event
- An interview with the trainer
- Observation of an Ideas2App development event and final pitching session of Ideas2App and interviewed administered questionnaire with 10 participants
- Survey of hackathon attendees through self-completion questionnaire and follow up interview with two participants.

Findings

(1) No_Code Bootcamps and associated training

Recruitment of students and students trained

This varied by college. Recruitment and selection of students was often determined on subjects being studied and timetabling constraints. Walsall College offered the training as an alternative to the Microsoft Driving Licence qualification for IT students, whereas Birmingham Metropolitan College opened the opportunity to a wider range of students. In most cases students did not have an option about enrolment, though one tutor deployed a competitive application process to ensure only committed students would enrol. Training was delivered to 287 students in the three participating Colleges. Students recruited tended to be from less advantaged backgrounds thereby meeting the requirement of the CRF.

Delivery

This involved developing a curriculum aimed at young people in a more generic training setting as previous training provision was developed for adults who were consciously pursuing an entrepreneurial pathway with a specific business idea. The structured linear curriculum developed by the trainer, who was able to draw on previous experience as a qualified teacher, was based on the steps required to develop a social media app. This generally worked well. Training was delivered remotely by the trainer with support of college tutors who were present with the students in the classroom. This arrangement generally worked well depending on the IT set up and number of students. The arrangement came about because of COVID-19 restrictions but had the unexpected benefit of enabling the trainer to be able to work around timetabling issues, particularly servicing across three geographically disparate college settings.

Which students benefit most?

Million Labs who developed the curriculum has the philosophy that everyone can learn no code. There were varying opinions about which students were best placed to take advantage of the No_Code training opportunity. The

trainer suggested it helped to have students from an IT background as they were more likely to want to explore how to get the most out of the software platform. Some tutors believed that more advanced level students studying IT who had experience of coding may be less enthused initially,

Perceived benefits

Tutors reported No_Code contributed to:

- Their college provision for student learning being linked to future work
- Their students' wider understanding of coding
- Knowledge of technologies that can be used in a commercial environment

Benefits identified for students included:

- Learning about how apps are developed
- No_Code training provides a starting point with interested students seeking to obtain a certificate and go on further to develop coding skills
- Those who finished the course were able to do an exam that resulted in a certificate
- More specifically for design students, it provided an opportunity to relate user experience and development of user interfaces to development of apps
- Students had to learn a specific set of processes and procedures and a way of thinking to develop an app; despite not involving coding this was still not an easy thing to do.

Opportunities

- Students being more entrepreneurial and developing their own app ideas.
- Opening up of new opportunities by virtue of being able to include the training on students' CVs and possibly work opportunities as an accredited No_Code developer. Developing links with relevant work placement units to create opportunities for students to consolidate skills in a workplace setting with interested businesses and employers.
- Colleges might develop their own apps to support their students. including social media.
- Potential for buy-in from other colleagues at the college to deliver No_Code training and teaching in the future. Connecting with the Bubble Academy would be an opportunity to support the delivery of No_Code training through interactive lessons for trainers to use.

Issues and challenges

- Time, timing, and timetabling were the biggest issues given how quickly the programme had to be delivered.
- The pace of training delivery was too fast for some students who could fall behind and become demotivated as result. The course was linear and missing part of a session meant students missed a vital step that they needed to know. Materials were made available for catch up but the burden of effort lay with the student/ institution to ensure this happened rather than the external course leader.
- Set up of teaching rooms and IT being used to deliver the training remotely was not always ideal. Due to College IT policies, it was often the case that the optimum software for delivering the training could not be used. For example, the expedient of using only Microsoft products meant training

- was delivered by Microsoft Teams which was designed for collaboration and not for training and teaching.
- Some students would have benefited from knowing that they would be using Bubble software to design an app rather than learning coding. This was more likely to occur where College leads had not fully communicated the aims and ambition of the project to individual tutors assigned to deliver it. Thereby the tutors were less able to effectively describe the course content to their students.
 - The training could only partially cover the functionality of Bubble and not all the functions that some students were most interested in.

Student views on training

The students expected to develop apps without an extensive knowledge of coding. They also expected to be able to develop a live and operational app and be able to draw upon their creativity. While they were excited to be able to see the app that they were developing with their classmates on their phone they were disappointed that because of the publication fee they were not able to share it with family and friends.

There were differences of opinion around the ease and difficulty of the of the course. Some students found it engaging and often completed the work quickly, whilst others struggled using the software which they did not find intuitive to use.

Generally, students:

- Expected greater creative freedom to develop their own app than was provided by the training which walked students through the stages of developing a social media app.
- Enjoyed learning a new skill to develop apps without having to have extensive knowledge of coding.
- Preferred face-to- face delivery rather than remote online delivery but appreciated the enthusiasm of the trainer and the level of detail and planning.
- Would have liked the opportunity to talk to employers or entrepreneurs who have used Bubble or using similar software to develop apps.
- Reported developing their digital skills generally and more specifically in app development.
- Improved their ability to work under pressure because of the pace of the training.
- Increased their confidence in skills in developing digital products and work in IT.

The number of students who thought that the training would allow them to consider starting their own business remain relatively stable at around 29%, pre and post training.

Two thirds of the students (65.2%) believed that the course did meet their expectations. Two-thirds would recommend it to other students.

(2) Ideas2App – SuperTech

24 ideas were accepted and developed. Founders at the SuperTech Seeds event were at different stages of the

development of their ideas and were able to draw on a range of expertise and advice from various experts.

The three main reasons for taking part in SuperTech Seeds were: to help the business to grow, to become a market leader, and to develop a viable business proposition. This shows that the founders were ambitious in believing their venture is scalable and achievable. The cohort comprised ambitious individuals.

In terms of founders’ progress against their main objectives, founders made good progress against:

- Developing a viable business proposition
- Developing a business plan
- Starting up a new venture
- Being in a better position to exploit market opportunities
- Accessing new technologies or platforms
- Networking and developing peer support

One of the mentors observed that participants were asking for an average of £100,000 investment from their investors and observed should just five founders receive funding from investors from the SuperTech Seeds demo day this would cover the investment by the CRF in the No_Code project.

The following themes were explicitly mentioned by founders as the benefits of the programme:

- The speed of development of a minimum viable product that is free for founders. No_Code makes the development of the minimum viable product (MVP) quicker and cheaper than fully coding.
- Excellent networking opportunities and events which were much better than other events at other organisations (across the country, not just in the West Midlands).
- The excellent supportive culture from the wider project team made sure that the project ran smoothly and helped allay worries from founders as they went through the development process.
- No_Code simplified the development journey of going from a business idea to creating a user friendly and investable app. This supported founders who were working alongside other jobs and/or had little or no previous experience of running their own business

(3) SuperTech Brum PropJam - a No_Code Hackathon focusing on PropTech in the West Midlands

Twenty businesses and organisations took part, of which half (10) were small businesses and the remaining participants were made up of representatives from four medium sized, four large business and two organisations.

Participants mainly became aware of the Hackathon through social media or through being recommended the opportunity by friends or colleagues.

When asked what they hoped to gain from the Hackathon, most participants referred to learning more about No_Code. Their aim was to develop their No_Code knowledge, but also their skills to help them more easily tackle challenges they face within the PropTech sector.

Several participants saw the event as an opportunity to network with others within the PropTech sector.

Many saw the hackathon as an opportunity to understand what technology was current available and in use within the sector.

Overall, the majority could see the new possibilities in how No_Code could be used to support existing business activities in some way.

Discussion

Our overall assessment is that the No_Code project has delivered a significant amount of activity within the budget provided by the CRF within a very short time scale. This was possible because the collaboration that delivered the project was able to draw upon and develop existing connections and resources within Birmingham and the Black Country.

No_Code is good example of a local sector-led place-based intervention and there is clear evidence of its contribution to the achievement of CRF objectives, in particular:

- Innovative response to local challenges and needs, including developing foundation skills needed in young people to be able to respond to the needs of the BPFs sector, the low level of innovation by the sector within the region and barriers faced by founders wishing to develop innovative new fintech products and services.
- Addressing potential barriers that the local population faced in accessing skills and local labour market opportunities.
- Contributing to the evidence base for future similar interventions.
- Providing opportunities for less advantaged young people. No_Code is designed to be easy to access when compared to full coding. This opens doors to people and students who may not be able to grasp coding languages easily to still be able to access opportunities in the technology sector.

Value for Money

Our assessment of value for money is based on the observations:

- It has efficiently met its stated objectives and has used CRF monies to help catalyse several important developments in the provision of support for innovative ventures in the BPFs sector. The project either achieved or made good progress against its anticipated outcomes within a very short period.
- The development of curriculum, course material and teaching plans by Million Labs in app development provides an important and useful resource that can be adapted by Colleges and FE providers. This resource can be said to be an important legacy of the project.
- A high level of equality, diversity and inclusion was achieved.
- The level of potential investment in new ventures in the region that could result from Ideas2App (SuperTech Seeds) strand.

Recommendations (Project)

1. **Colleges (and potentially other training providers) in partnership with local partners should explore how they can fund, continue, and expand the provision of training to young people and digital skills to less advantaged adults** who wish to consider career progression and entry into potentially more productive and remunerated roles with BPFs sector in the region. This will require an increasing the supply of trained No_Code teachers by running Inset sessions within colleges and schools and providing opportunities to other training providers in the region to offer as part of their offer in upskilling adults.
2. **The collaboration created to deliver the pilot should continue receive support given it is success in delivering pilots intended outcomes.** This could include funding for delivering similar accelerator type activity to Ideas2App and adapting hackathon approach to become more demonstration event to raise awareness of the potential of No_Code with existing businesses.
3. **Continued support for founders to develop their businesses, young people deploy the skills they developed and college tutors in the integration of No_Code offer within College curriculum with the proviso of providing data to assess the longer term impacts of the No_Code pilot.** This might include creating an Ideas2App graduate alumni group with the intention of keeping in touch and generation of success stories that can be used to encourage other potential founders of innovative BPFs business in the region.
4. **Colleges use learning from the pilot to adapt and scale provision.** This would include: (a) supporting tutors trained in No_Code and providing them with the flexibility to embed / mainstream No_Code teaching into their own subject areas to make it more relevant to their students; (b) limiting group sizes to around 15 so students can be better supported in their learning; (c) adapting curriculum material so provision can be differentiated by needs, prior attainment and interest of different student groups; and (d) follow-on course or masterclass for students based around the developing of their app.

Recommendations to the funder

1. Rather than set arbitrary contractual outcome measures around employment and businesses created, the funder should agree with projects success criteria that can be used to monitor progress towards achieving these outcomes. This is particularly important for projects that are funded for less than a year when these outcomes often will only start to materialise in the second or third year after beneficiaries enter the project.
2. Consider how the contractual side can be streamlined to reduce both unnecessary burdens, support dialogue between the funder and those delivering projects that supports learning and better outcomes and reduces delay. Some aspects of this pilot had time critical pathways which mean extending the project completion date provides little benefit, i.e. provision of training of young people had to be delivered with their College's academic year.

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Glossary

Bubble	A software platform that allows the user to develop interactive, multi-user apps for desktop and mobile web browsers, including features to build a site like Facebook or Airbnb.
PropTech	Property Technology is the application of information technology in the property sector to provide software that reduces paperwork as well as making transactions quicker, more efficient, and more secure.

Table of abbreviations

BMET	Birmingham Metropolitan College
BPFS	Business professional and financial services
CPD	Continuous professional development
CRF	Community Renewal Fund
FE	Further Education
GBSLEP	Greater Birmingham and Solihull Local Enterprise Partnership
LIS	Local Industrial Strategy
MVP	Minimum Viable Product
ROI	Return on Investment

Introduction

Background

The No_Code project was designed to align with the needs of the business professional and financial services (BPFS) sector in the region. BPFS was identified as a priority sector in the Local Industrial Strategy (LIS)¹, being the largest West Midlands sector by employment, GVA contribution and number of firms. It also contributes to the achievement of LIS in terms of Modern Services Major Market Opportunity identified for technology-led, next generation services and servitization drivers affecting all sectors in the regional economy transforming the nature of employment and business models. No_Code development has the potential to support the realisation of the LIS Modern Services vision over the coming decade through increasing innovation activity.

The BPFS sector in the region needs to innovate more, develop more of a R&D culture and be equipped to respond to changing regulatory boundaries and technologies that are challenging traditional professional services firms and established business models. This is an opportunity, a threat and imperative for sector and the West Midlands economy.

The [Kalifa Review of UK FinTech \(2021\)](#)² identified that emerging next generation services sectors like FinTech are clear routes to growth through jobs and trade for the UK, with regions a key asset in this national opportunity. Birmingham and the West Midlands was recognised as a leading centre which underpins 'why here, why now'.

Translating this into local needs, the No_Code development project aimed to test approaches that:

- reduce start-up barriers for technology-based businesses, enabling founders/ entrepreneurs to rapid build their business idea and go to market to validate their ambition.
- develop digital skills needed by the sector and support entrepreneurial pathways into the sector for young people and unemployed.
- raise awareness amongst existing businesses in the sector about how they can innovate and respond to new challenges and opportunities.

What is No_Code?

No_Code is a potentially transformative approach to developing computer applications to support new business models by existing businesses and establishment of new innovative business ventures. It achieves this using programming tools that do not require the user to be expert in coding to develop software applications. The potential economic benefits to the West Midlands economy are derived from the way No_Code development can transform the way technology-based enterprises and services are started. Its power lies in the ability to build fully functioning apps cheaper, faster and without coding skills, reducing costs and time taken (typically £55,000+ and 18 months, to £5,000+

¹ The Local Industrial Strategy was the prevailing regional economic strategy at the time of the CRF project application and award. It is available to view here: <https://www.gov.uk/government/publications/west-midlands-local-industrial-strategy> [Last accessed 26.9.2022]. This document has been supplemented locally by the West Midlands Plan for Growth which continues to recognise and prioritise the BPFS sector, particularly the importance of the technology strand within it. Available to view here: <https://www.wmca.org.uk/strategies/plan-for-growth/> [Last accessed 26.9.22]

² Kalifa Review of UK Fintech. Can be accessed at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/978396/KalifaReviewofUKFintech01.pdf

and weeks) and therefore removing significant barriers to start-up creation, business growth and innovation.

The No_Code Community Renewal Fund (CRF) application utilised this game-changing technology to support the BPFs sector; where innovation barriers are high and specialist domain expertise prevents many future tech-entrepreneurs from successfully founding start-ups, and where No_Code development is an emerging skill set sought by large employers to build corporate entrepreneurship capabilities.

Community Renewal Fund

The No_Code project was a programme of activities funded by a successful bid for funding from the [Community Renewal Fund](#) which provided £220 million in investment in local communities. The Fund's overarching aims were:

[to] help support local areas to pilot imaginative new approaches and programmes that unleash their potential, instil pride, and prepare them to take full advantage of the UK Shared Prosperity Fund when it launches in 2022.

The objectives of the CRF included:

- Supporting a smooth transition from a European funding mechanism to the UK Shared Prosperity Fund.
- Enabling innovation through pilots, including innovative responses to local challenges and local needs, to test greater integration of types of interventions and greater flexibility between investment themes. This includes removing barriers that people face in accessing skills and local labour market opportunities, building the evidence base for future interventions and exploring the viability of new ideas.
- Develop a new way of working between UK government and places.
- Levelling up and creating opportunity.

The UK Community Renewal Fund was a competitive process with no pre-set eligibility, targeted at 100 priority places based on an index of economic resilience. The West Midlands Combined Authority set the priorities for the CRF application process across four strands: investment in skills: investment in business: investment in communities and place: supporting people into employment.

Greater Birmingham & Solihull LEP (GBSLEP) led a consortium that made a successful proposal for £447,575 under the investment in business strand, specifically working within the local authority areas of Birmingham, Walsall and Dudley. The consortium included:

- [SuperTech](#): the West Midlands supercluster for next generation services. This is a market-facing industry led group (GBSLEP is the accountable body) backed by BPFs sector employers including Wesleyan, CBRE, Bruntwood, Shoosmiths, Nimbus Maps, Crowd Property amongst others and working in partnership with West Midlands Growth Company. The project leverages organisations and networks to deliver the activities.
- Three education delivery partners including Birmingham Metropolitan College (which is home to the Greater Birmingham Professional Services Academy), Walsall College and Dudley College.
- Million Labs - the UK's only No_Code based start-up organisation, based in Birmingham. Million Labs supports founders around the globe to leverage the power of No_Code in developing business concepts into income generating applications.

- West Midlands Growth Company – the regional marketing agency responsible for inward investment and the West Midlands’ brand and place proposition. WMGC have provided marketing and comms services to SuperTech since inception as a key asset in strengthening the BPFs sector offer.
- City-REDI, which leads the WMREDI consortium, as independent evaluation partner.

Focus of the pilot

The No_Code pilot has adopted a comprehensive approach, encompassing meeting both the demand side in terms of developing interest from BPFs businesses and start-up ventures that could benefit from a No_Code approach, and the supply-side in terms of developing the skill base within the region. The intended beneficiaries for

- **No_Code Bootcamps and Associated Training** included young people (16–19-year-olds attending FE Colleges) and economically inactive adults, who would gain skills that could increase their employability through using the No_Code app development approach. This specifically includes being potentially empowered to consider opportunities for self-employment and entrepreneurial pathways, as well considering working in BPFs and tech sectors.
- **Hackathons** are existing BPFs businesses based in the region. This encompasses not only SMEs, but also large employers in the BPFs sector whose regional offices could benefit in terms of identifying opportunities to introduce new innovative products and services, and potential partnerships. Large firms were therefore included because of their ability to innovate to maintain sector strength in the region as an important component in the West Midlands economy.
- **Ideas2App** were potential founders and with viable business ideas/value propositions for a rapid build app with support from the SuperTech network.

Design of the pilot

The pilot comprises a programme of three sets of activities:

No_Code Bootcamps and Associated Training

Activities and course curricula were designed to be delivered virtually, so requiring FE partners to provide access to a computer, internet connection and meetings platform (e.g. Zoom/ MS Teams) for their students. This approach was designed during government restrictions related to the pandemic to ensure the project could be delivered. It provided discretion based on the needs of learners and the option to use college-based facilities.

The pilot involved the development and piloting of a training curriculum led by an external No_Code training professional with support from FE nominated educators (tutors) participating as part of their training and providing support to students. The intention of the pilot was that as capabilities increased, there would be a phased transition of delivery from external contractors to college tutors to enable continuation of provision beyond the CRF funding period.

Ideas2App (marketed as SuperTech Seeds)

There was an open application process to invite potential founders and entrepreneurs to submit ideas for a rapid build app. Proposals would be reviewed and followed up with virtual engagements (e.g. Zoom/Teams) by newly appointed No_Code Entrepreneurs in Residence (EiRs) hosted by GBSLEP. Successful applicants would work with the No_Code development team at Million Labs to build the

minimum viable product (MPV) and enable business launch. This would be supplemented by start-up support to be provided by corporate BPFs community mentors and expert-led workshops.

Hackathons

Hackathons are a recognised and successful model for innovative live teamworking in the technology sector. The No_Code Hackathon would support teams/ individuals, who are entered into the event, to undertake rapid innovation as per a typical hackathon model but alongside a team of No_Code developers who can rapid build ideas 'live', accelerating the innovation journey where 'seeing is believing'. At the time of the bid to the CRF it was assumed that a hybrid virtual and in-person delivery model would be most likely format, with the contingency of entirely virtual delivery should prevailing conditions stipulate otherwise.

Programme theory

Figure 1 provides an overview of the simplified programme theory for No_Code which brings together the three sets of interconnected activities that collectively deliver the expected outputs and outcomes attached to CRF funding.

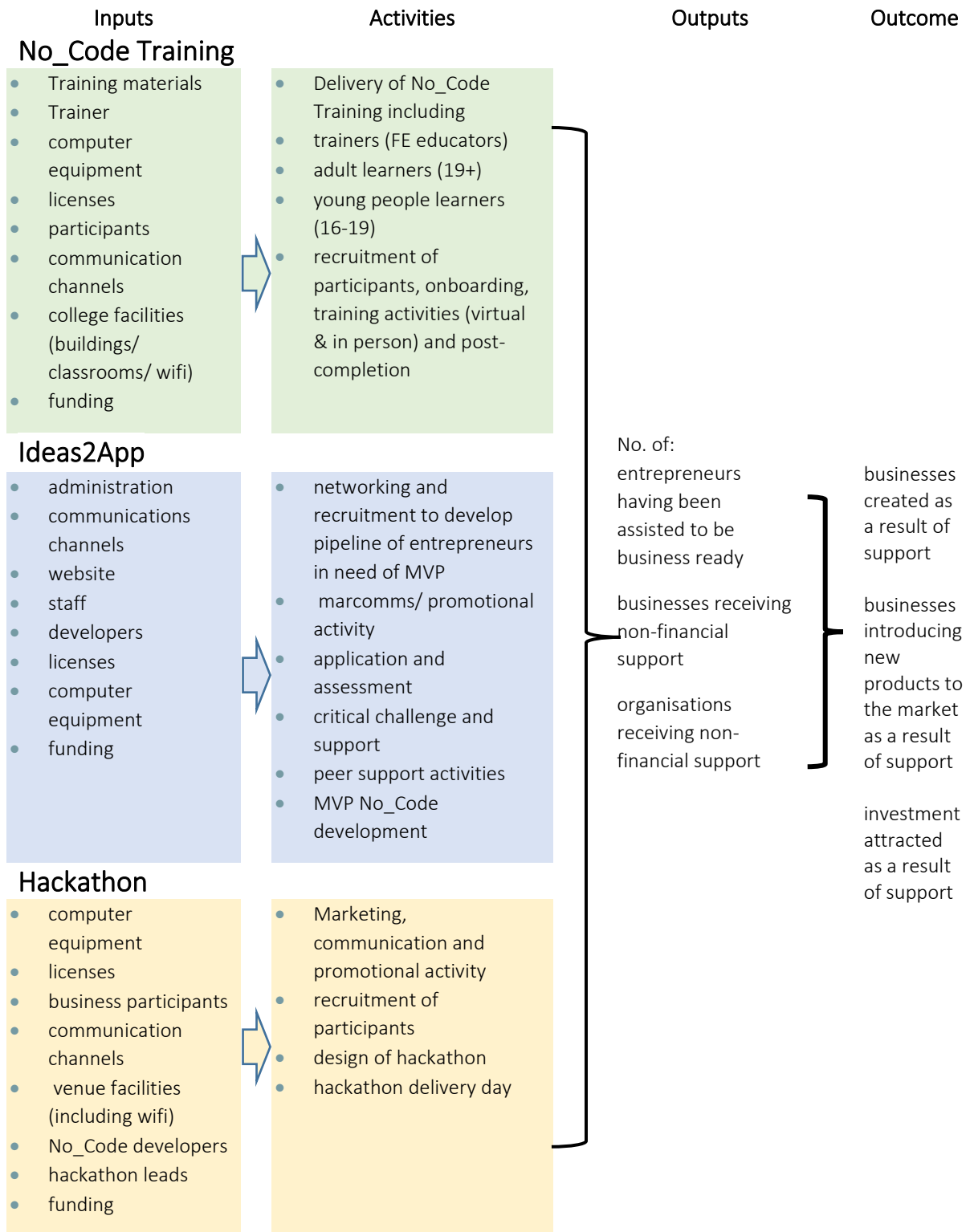


Figure 1: Theory of change for No_Code

Evaluation approach

City-REDI, as part of the WMREDI consortium which GBSLEP is also a member of, was invited to be included in the CRF application as the independent evaluators of the No_Code pilot. This allowed the adoption of more developmental and formative approach³ to the evaluation of the pilot capturing a broad range of impacts and lessons learnt for future interventions. Given the modest scale of the initiative, the short delivery time scale, ethical considerations, and the commitment to creating synergies with and leveraging existing provision it was not feasible or viable to create a counterfactual in the form of control or comparison group.

Methodologically, the evaluation drew on the following evidence sources:

- Documents and management information.
- Pre and post training questionnaires for college students administered by the Colleges
- Focus group with college students.
- Paired, group and individual interviews with college tutors involved in delivering bootcamps and training. Observation of a train the trainer event.
- Interview with the trainer.
- Observation of an ideas to app development event combined with short interviews with attendees.
- Observation of final pitching session of Ideas2App and administered questionnaire with selected participants.
- Survey of hackathon attendees through self-completion questionnaire and follow up interview with two participants.

³ Form of process evaluation and early assessment of emerging benefits.

Findings

(1) No_Code Bootcamps and Associated Training

Overview

Between the three FE partners who delivered training, 287 students were recruited and started the training. 158 students completed the pre-training questionnaire and 46 completed the post-training questionnaire.

Table 1: Breakdown of students who received training

		N	Percent
Learners	Total	287	
Sex (based on survey responses)	Female	87	31
	Male	142	49
	Preferred not to say	58	20
Self-reported ethnicity	White	87	30
	Asian	41	14
	Caribbean	28	10
	Multiple Ethnic Groups	22	8
	African	18	6
	Other ethnic groups	13	5
	Asian British	12	4
	Mixed	6	2
	Black British	1	
	Prefer not to say	59	21

The following themes were raised and discussed in interviews with the trainer, college tutors and focus groups.

Theme	Trainer	Tutor	Student
Pedological approach	●		
Software platform / Bubble	●	●	
Delivery			
• Teaching resources	●	●	
• Class size		●	
• Pace		●	●
• Challenge packs	●		
Student ability	●		
Student recruitment	●	●	●
Everyone can learn no code	●		
Piloting training in FE	●		
Differentiated curriculum for different student groups	●		
Close the skills and aspiration gap	●	●	
Timing and timetabling	●		
Certification	●		
Student engagement		●	
Benefits for students		●	
• how apps are developed		●	
• certificate	●	●	
• go on and develop coding skills		●	
• interface design (design and art students)		●	
• programming skills		●	

Theme	Trainer	Tutor	Student
Students who benefited most (previous experience of coding, education level)		●	
Collaboration between students		●	
Misperceptions of aims of the training		●	
Partly covered the functionality of Bubble		●	
Opportunities for students to practice and reinforce learning		●	
Capability to deliver in the future		●	
Student expectations (to develop apps, without an extensive knowledge of coding, develop a live and operational app, ease and difficulty)		●	
Enjoyment			●
Areas for improvement			
<ul style="list-style-type: none"> Providing creative freedom for students 		●	
<ul style="list-style-type: none"> Being able to publish a finished product 		●	●
<ul style="list-style-type: none"> Integrating the course with other aspects of student’s learning so to engage students more 		●	
<ul style="list-style-type: none"> opportunity to talk to employers or entrepreneurs who have used Bubble or using similar software to develop apps 			
Benefits of participation			
<ul style="list-style-type: none"> digital skills 			●
<ul style="list-style-type: none"> ability to work under pressure 			●
<ul style="list-style-type: none"> skill set future employers would find desirable / Employability 		●	●

Pedological approach

The founders of Million Labs, while having significant experience of training adult learners – particularly new and early-stage founder - in No_Code, realised a different approach was needed more along the lines of ‘teaching’ rather than ‘training’ for young people and employed an experienced IT teacher as the trainer who was tasked to develop the training curriculum. The approach adopted was **to base teaching around building an application similar to Instagram while students learned to use the freely available [Bubble⁴](#) software platform**. Developing the course **required significant time investment** requiring the trainer first learning how to use Bubble properly before investing around 15 days writing the course material⁵ that would be delivered over 8 weeks. **The course had to be “very linear”** taking students through all necessary stages required to develop a social media app with a prototype app they could use on their phone in week 6. It was not feasible nor desirable to produce all material upfront⁶ as would have been preferred by college tutors who were assisting in delivering the training. Given the novelty of the course the trainer needed to be able to reflect on how students’ progress and how they were responding and adapt materials accordingly. One example of adopting this reflective approach to development of course material was the **development of challenge packs** were produced for the one or two students that were steaming ahead in each class, so that they did not lose their enthusiasm.

Million Labs’ philosophy is that everyone can learn No_Code. However, students from an IT background tend to come with an enquiring attitude and are ready to explore how to get the most out of the software platform. They also have the advantage of experience of building their own webpage/ website and in coding allowing them to grasp how to use Bubble much more quickly. Their expectations are different with **coding retaining its own place for more complex applications** (e.g. gaming) and the use of Bubble allows fast prototyping and testing of apps required by businesses. A

⁴ Bubble is free and requires creating a passworded user account to build an app that can be loaded to a phone.

⁵ This involved setting learning objectives, producing lesson plans and supporting materials.

⁶ Initially materials were produced for the first three weeks and then remaining material was developed while delivering the course.

comparison of No_Code approach and coding was described by the trainer as “*like comparing milk and coca cola – they are both drinks, but they are different*”.

Delivery

The trainer delivered classes remotely⁷ and was **supported by college tutors present in a classroom setting** with their students to check on students and provide trouble shooting when issues arose. Generally, this arrangement worked well with the trainer greatly valuing the support provided by tutors. Tutors valued the very detailed lesson plans produced by experienced qualified teacher and material that described the process step-by-step. These were shared with tutors on the preceding Friday along with student notes to each training session. This was not always sufficiently in advance from some college tutors’ perspectives as would have preferred more time to master the material in advance of the next lesson. The material was used pragmatically to support students who were late or missed lessons or needed to catch up.

Ability of students and how classes were managed varied across colleges. Walsall College created a natural experiment by having a mixed ability group. High ability students asked more questions and just cracked on. Lower ability students needed more support which was sometimes provided in the form of peer learning and support by higher ability students. Walsall ran a “very tight ship” in that everyone was there on time and set up in their places ready to start. It was similar in Dudley - though a lower ability group found it hard to concentrate. BMET classes varied by campus with one group having to rely on using the tutor sharing a computer screen, rather than having a projection of what the trainer was doing on the screen at the front. Otherwise, the set up tended to be good with a Whiteboard used as a large screen.

Reflecting discussions with the trainer, students would have preferred **face-to-face** delivery rather remote online delivery. They appreciated the enthusiasm of the trainer and the level of detail and planning. Their tutor was in the class with the students and helped facilitate the group discussion over Microsoft Teams. Their tutor was learning how to use Bubble – the software platform being used - at the same time as the students and was only just ahead of training sessions to be able to assist students. It was felt having the trainer physically present would have provided greater support to struggling students

Recruitment of students

There were 158 responses from the No_Code participants at the three participating colleges. Figure 2 shows which colleges respondents attended. Most attended Birmingham Metropolitan (BMET) College with 101 (63.9%) of total respondents being from the college. There were 33 respondents from Dudley (20.9% of total responses). Walsall College had the lowest number of respondents at 24 (15.2%).

⁷ This was necessary because of pandemic restrictions and logistical issues created by the course being delivered over a short period in different colleges and multiple groups of students.

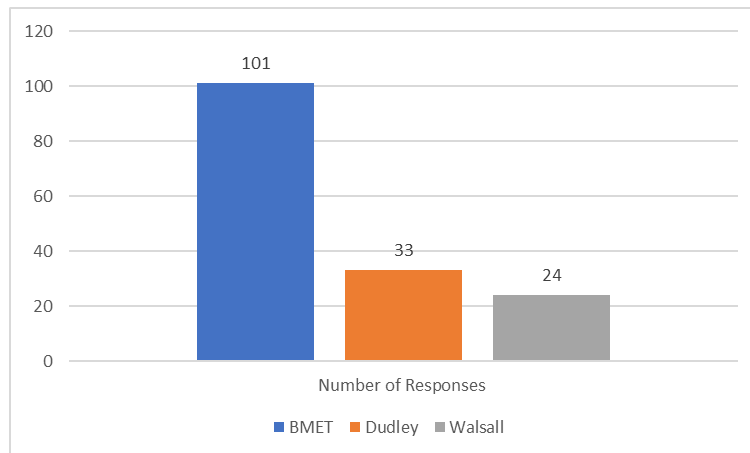


Figure 2: Breakdown of participants by college

There were fewer responses to the post-training survey, with only 46 post-survey responses, compared to the 158 pre-survey responses. There are several explanations for this, including that once students finished the course it was the end of the school year and students were preparing for exams. In some cases, end of year excursions meant that students were not present to complete the post-survey questions.⁸

Participant choice

Students overall felt they had little choice on whether to take part. Over three-quarters (123 (77.8%)) of those responding to the pre-training survey stated they were expected to participate in the training and only 34 (21.5%) reporting choosing to participate in the course. (Figure 3)

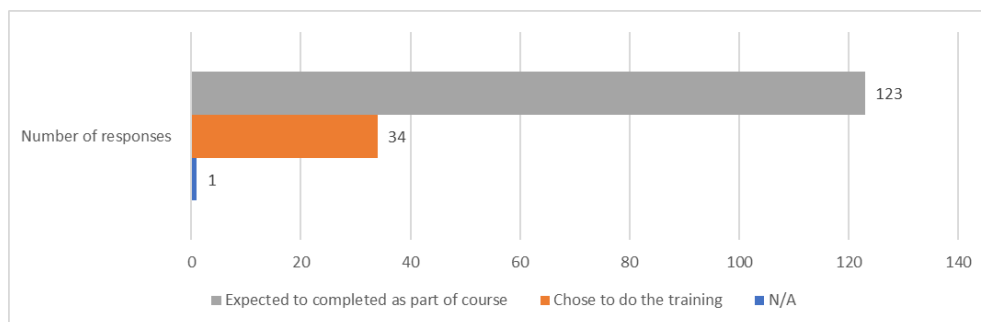


Figure 3: Percentage students which chose or were expected to complete the training

Note: 1 participant did not respond to this question.

The students who took part in the focus group reported they did not self-select; rather their tutor had selected them based on their ability and the likelihood of them taking advantage of the opportunity provided. They were encouraged to participate, with tutors explaining the benefits of the course - including developing new skills and the widening of their future job prospects.

⁸ Completion of questionnaires by students was optional in accordance with ethical guidelines set down by the University. It was easier for tutors to encourage students to complete the baseline questionnaire before or during first training session with the support of their senior management team. There were fewer incentives to complete the follow-up questionnaire after completion of the training.

The **trainer observed recruitment and selection of students varied by college**. Walsall targeted IT students, whereas BMET included classes of students from a range of different areas including one class made up of students studying more creative subjects. The pre-training survey found differences between subjects studied at BMET. All students studying Foundation Business and Law and Criminology reported they were expected to attend the course, whereas 6 (13.6%) of those that studying art and 13 (92.9%) of those studying graphic design reported they had chosen to do so. Overall, students attending Dudley College were more likely to have reported they opted to do the training (13 respondents (34.9%)), whereas those students completing the training at Walsall were the least likely to have reported choosing to participate (2, 4.2%).

Walsall College choose to provide No_Code training as an **alternative to a Microsoft qualification** to IT students as part of their timetabled work-related training. Training was delivered to two groups of students that differed in size. A larger mixed group of 26 students including both level 2 and 3 students and a smaller group of 8 students. BMET **varied its approach to recruitment of students by subjects they were studying** and the final selection of students was also shaped by **timetabling and trainer availability**. This meant that for one subject area all 60 first year students undertook training because of the availability of a contextual learning slot resulting in a range of abilities. However, those studying art and design were required to apply to take part with the ten most interested and willing to do extra work being accepted to avoid non completers observed in other student cohorts. This cohort was made up of more experienced second year level 3 students who were interested and intrigued about the possibilities offered by the training. Because the group know each other well they were really collaborative and helped each other out, but this may not be the case for future groups. This group of BMET students went on to collaborate to build an app to show their class artwork.

Dudley College started later in delivering their No_Code teaching to students than the other two colleges. Their 2021/2022 cohort included 58 students studying for level 2 and level 3 qualifications in computing and performing arts. For the 2022/2023 academic year, Dudley College is expanding delivery to four groups to include those studying Digital Skills and Music Production at levels 2, 3, and 4.

Student engagement

There were several factors identified that affected student engagement which were often outside the control of the project and were related to constraints colleges and wider partners were working within. Some factors were specific to individual colleges or classes within colleges. **Factors that reduced engagement** included:

- Set up of teaching room and IT being used to deliver the training remotely. Due to College IT policies the optimum software for delivering the training could not be used. For example, the expedient of using only Microsoft products meant training was delivered by Microsoft Teams which was designed for collaboration and not for training and teaching. In practical teams this meant there was only one screen supported whereas other packages such as Zoom allow separate screens to be supported. In practical teams it was less easy for the trainer to monitor the group while presenting. In other cases, where students literally were watching a single screen for instructions by trainer they had less of a connection with the trainer.
- The expedient of training mixed ability groups because of timetabling meant more advanced Level 3 students with previous coding experience could become disengaged.

- Colleges often had no option but to timetable training at the end of the day for some students when they found it harder to concentrate.
- The expedient of larger groups to fit round timetabling meant students could fall behind their peers and the struggle to catch up increased the likelihood of them losing interest
- Some students would have benefited knowing they would be using Bubble software to design an app rather than learning coding. This was more likely to occur where College leads had not fully communicated the aims and ambition of the project to individual tutors assigned to deliver it thereby were less able to effectively describe the course content to their students. One tutor mentioned he may have overpromised in terms of the benefits because at the time the college was recruiting students to take part he was not aware that it was not possible to publish an app because of the £300 fee. From a course design perspective, 'publishing' an app is not critical to learning and brings other challenges of managing real world apps to individuals who are not pursuing new business ventures
- Some students simply fell behind their peers because they were not as quick as learning as their peers, so affecting their engagement and interest in the work.
- More creative students who did not enjoy following a set series of procedures to complete a specific task and stages in developing a facsimile of Instagram were more likely to lose interest. Similarly, students who missed important stages in programming Bubble found it hard to catch up and were more likely to disengage and drop out.

Factors that helped with engagement included:

- Working towards a final product in the form of the app working on their phone. When they first downloaded their beta version it was a lightbulb moment for them. On reflection, more students would have been more fully engaged if they had been shown this would be the outcome of their efforts at the outset. Students were able to experience self-actualisation reinforcing engagement by being able to show others their work by sharing a working version of their app on their phone with family and friends. This would not have been possible if they had been using conventional coding to develop an app.
- Being informed of potential earning potential from mastering and using No_Code approach in developing and commercialising apps.
- Being able to relate learning back to their studies. For example, graphic and design students were particularly in how to design their apps user interface within Bubble.
- Reducing the need for deferred gratification by being able to create an app quickly through the Bubble platform meant students could see the impact of their learning after just a short period of time.
- Having detailed lesson plans and student notes was helpful to tutors in ensuring their students keep on track and not fall behind. Students who were more advanced could also see the future steps in the student notes and were able to leap ahead. This helped the advanced students keep on track and maintained their engagement.
- Enjoyment from learning a new skill to develop apps without having to have extensive knowledge of coding. Their tutor stated that students at their level do not often get to engage with new technologies or software; this project offered them the opportunity to experience and learn something that they would not have usually had the opportunity to learn.

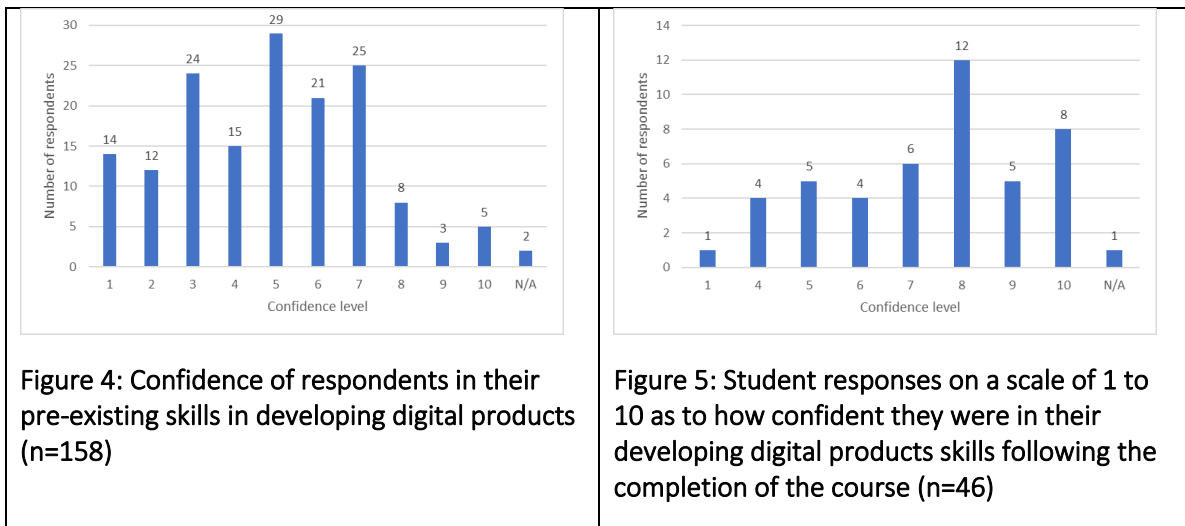
Those who were tech savvy found the course a lot easier. Those from a more practical subject area struggled more and needed more extended time to be able to master the software – including an extra session a week for those who fell behind.

Benefits of No_Code training to young people

Confidence in digital skills

Students were asked prior to undertaking training how confident they were in skills for developing digital products on scale of 1 to 10 (Figure 4) and after completing their training (Figure 5).

Most (72.2%) were moderately confident scoring themselves between 3 and 7 in their skills in developing digital products. 26 students around a sixth (16.5%) reported they had no confidence in their skillset. A tenth (n=16) were confident in their existing skillset and scored themselves between 8 and 10. 2 respondents (1.3%) did not answer the question.



Students were asked again after completing training about their confidence in developing their skills in developing digital products (Question 1). Of those who completed the post-training questionnaire, there was a five-fold increase in those who were highly confident: 56.5% of respondents rated their confidence in their ability between 8 and 10. A tenth of respondents still reported low confidence in their abilities after training (10.9% rated their skills at a level of 1 or 2 compared to 16.5% pretraining).

Expectations around specific digital skills development

Table 2: Skills that students expected to develop whilst on the course (n=158) and reported skills developed (n=46)

Expected to develop Skills in:	Percent	Developed skills in	Percent
App development	44.3	App development	41.3
		Bubble	32.6
IT / Digital Skills	25.3	Digital skills	4.3
Website development	14.6	Website development	10.9
Coding	9.5	Coding	4.3
No Code	7.6	No Code	13.0
		Teamwork	6.5
Design Programmes	7.0		
Problem solving	3.8	Problem solving	2.2
N/A	3.8	N/A	6.5
None	3.8	None	6.5
Other	3.2	Other	4.3
Video editing	2.5		
Not sure	1.9	Not sure	2.2

App and website development skills

The most common skill students wished to develop was app building. Over two-fifths (44.3%) expected to have developed the skills to build a functioning app by the end of the course. Three art students from BMET expected to be able to do this with the anticipation of building a website to 'market' their own artwork (participant 39, 29, 89). A sixth (14.6%) of respondents sought to develop their skills in website development. 41.3% of the students who responded in the post-training survey reported that they felt they had developed their app development skills and 10.9% their website development skills. A number stated alongside this that they had learnt how to make the app/website 'user friendly' (participants 4, 8, 27, 32). This knowledge was important to students whether they answered that they had strong or poor digital skills in the pre survey question 3, as even if students had a high ability in coding before the course, they may not have had the knowledge on how to make an app/website 'user friendly' and this is an invaluable skill to all app developers, no matter what their coding or no coding abilities may be.

IT/digital skills

A quarter (25.3%) of the students specifically referenced their expectation for improving their IT or digital skills during the course. It might be expected that this would be higher; however, most students focused on the app development skills they would gain and did not reference furthering their IT or digital skills.

Coding

A tenth (9.5%) stated they either expected to develop or further their skills in coding. This would suggest that several students misunderstood the purpose of this training course, as the students were being taught how to build apps or websites, without the use of coding. Half of these students

attended one specific class studying graphic design which suggests that the training had been incorrectly introduced by tutors at the start of the course. This corresponds with tutors in the same college reporting that based on the information they had received they misconstrued the course as covering coding.

Bubble, No code or No coding

No participant referred to Bubble prior to the course. Few (7.6%) answered that they expected to be able to develop an app or website without the use of coding. This may suggest that few students had understood that they would be developing apps and websites without the need of coding. However, the answers were in too little depth to be able to decipher this from the findings.

In total 45.6% of students made specific reference to having learnt how to develop an app or website using either Bubble or No_Code. This gave many students confidence in their abilities to build apps or websites in the future without extensive coding experience. This was most important to students which had scored their knowledge poorly in question 3 on the pre survey; however, several students who were already confident in their abilities, also reference No_Code or Bubble as a new skill or alternative skill to that they already had.

One of the students stated they would now be able to build an app '*without the hard work of getting coding to work*' (14). This would indicate that some students see coding as difficult to learn and saw Bubble as providing them with the ability to bypass the need for difficult and technical knowledge around coding.

Teamwork

6.5% of students stated that they enjoyed the group exercises, as it enabled them to develop their teamwork skills. Participants stated:

'Having other people to work with to develop a project is very practical and time efficient'.(16)

'...when we were all working as a team whilst separately creating our own apps and having consistent communication between one another.'(17)

Working as a team allowed students to share their knowledge between team members furthering the development of the apps. This might have been important to students as it was highlighted in focus groups and this post-training survey, that they would have preferred the course to have been in person to enable the trainer to help them when they were struggling or had question. The group exercise may have enabled them to ask questions of their peers and knowledge share, which was an element they were missing without the in-person tutor.

Design/ Video skills

Several students, mainly studying in a graphic design or art class, sought to develop their design (7%) or media (video editing) skills (2.5%) including using design software such as 'illustrator' or 'photoshop'. This may suggest these students had misunderstood the purpose of the training when

first introduced to No_Code or were referencing IT skills they considered useful to their studies and future career.

Students were able to pick up skills and develop them over the course of the training. Everyone developed an app so everyone was benefitting from the course and project aims.

In addition, **tutors observed the following additional benefits in terms of their students' digital skills:**

- The provision of an entry point into app development for students who may not otherwise considered it to be option
- An improved understanding of app development, including learning a structured approach to develop their own apps that ensure different components needed are included and breaking down and sequencing tasks to flow in the right order for it to work. Students had to learn a specific set of processes and procedures and way of thinking to develop an app, and despite not involving coding they were still learning programming skills.
- The opportunity for interested students to obtain a certificate by completing a test.
- Providing motivation for students not initially interested in coding to go on further their digital skills by learning coding.
- More specifically for design students, it provided an opportunity to relate user experience and development of user interfaces to development of apps. Taking part in No_Code complemented the teaching of art and design in terms of designing the look of an app and understanding how to achieve that look and feel.

One student used the programme to design an app related to amination that they developed for an exhibition in which attendees could enter a code for more information. This required them to seek additional information from the trainer on how they would do that as the course did not cover all features of Bubble. The trainer was really good at providing additional learning materials for those who wished to develop their own apps related to another College project

Students who benefitted most:

- **Previous experience of coding:** Tutors varied in their views in the extent to which those students who have prior experience of coding or studying IT resulted in better engagement in the course. One reported that Level 3 students who had done coding could be more disruptive if they thought their skills were too advanced whereas a second tutor believed slightly more advanced students were more engaged because “they got No_Code”.
- **Level of education:** Again, views varied, and this depended on subjects being studied by students. In a mixed ability group in one of the colleges level 2 students were more positive than level 3 information technology students. It was reported that may be better to deliver to second rather than first year students when all students know each other.
- Level 2 students benefitted most because of the easiness to get to grips with No_Code. They could grasp the ideas behind No_Code and it was not too difficult as all students were able to develop an app.

Job prospects and future work

Students were asked about much they expected No_Code training would help improve their job prospects, confidence to work in IT and allow them to consider starting their own business before starting and asked after completion what difference the training made.

Improve job prospects

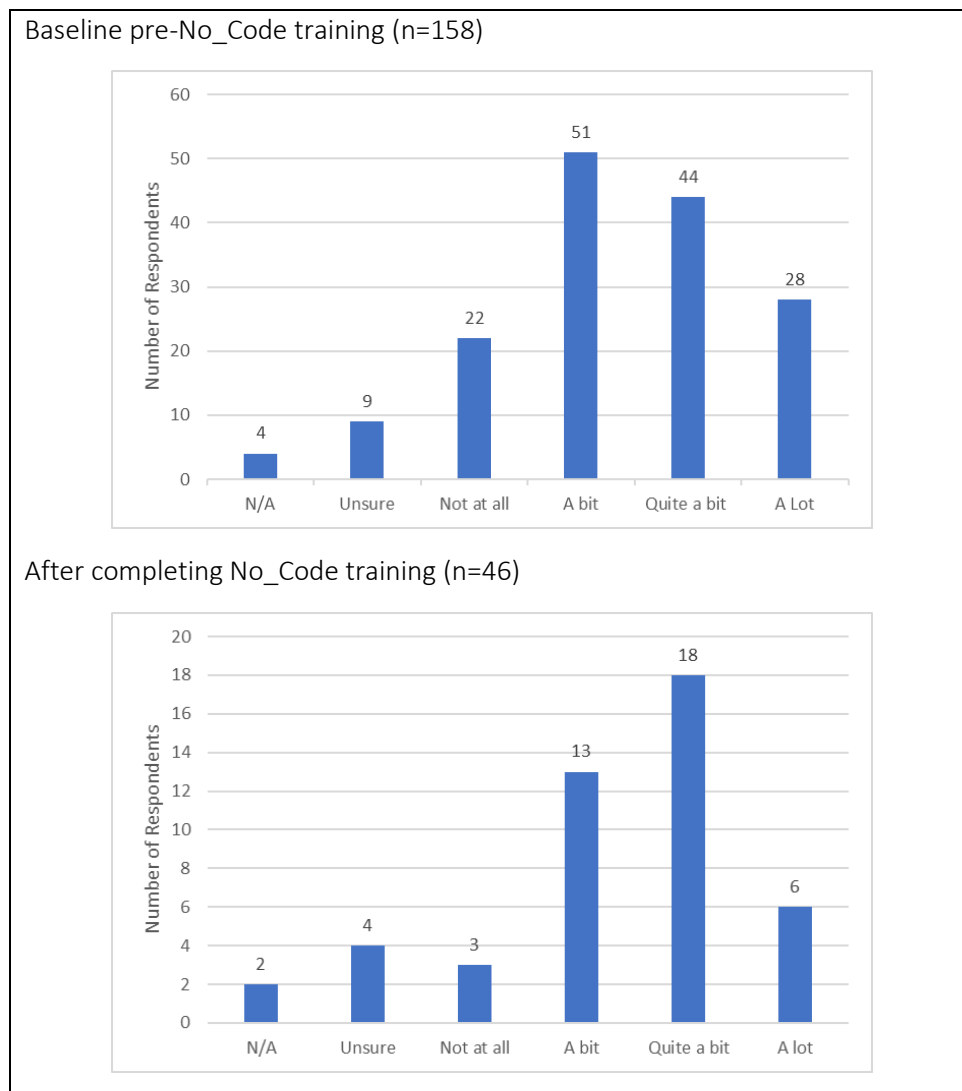


Figure 6: No_Code and improving job prospects

Two-fifths (39.1%) of respondents after completing the course said that they thought that it had improved their job prospects 'quite a bit'. This is an increase in the percentage of people stating that they thought it improved their job prospects 'quite a bit' from the pre-survey. However, there was a fall in the number of people who stated it would help their job prospects 'a lot' from 17% to 13%, which may mean that some people downgraded their rating from 'a lot' to 'quite a bit'. There was also an increase in the number of people who were 'unsure' of whether it would increase their job prospects from 5.7% to 8.7%. However, the percentage of people who thought it would not help improve their job prospects at all more than halved from 13.9% in the pre-survey to 6.5% in the post training survey.

Under a fifth (17.7%) thought taking part in No_Code training would help improve their job prospects 'a lot' and a quarter (27.8%) said they thought that it would help them 'Quite a bit'. A third of respondents 32.2% stated that they thought No_Code training would help them 'a bit'. Only 13.9% thought the course would not help them at all in the future. With 5.7% being unsure of whether it would improve their job prospects. 5.7% failed to answer the question.

Expectations around future employment in IT need to be tempered as one tutor observed: "*In theory students could go out and get a job developing apps using No_Code. But in practice I do not think this would happen as most jobs in the industry are for graduates*". The challenge being **employers were not currently considering young people with Level 3 let alone Level 2 qualifications** for IT roles and were seeking coding skills and would need to be educated about the merits of employing young people skilled in using No_Code. From a social inclusion perspective, another tutor noted that No_Code would be **beneficial for addressing skills gaps for mature students in their 20s returning to education** as app development offers an alternative employment option.

The trainer delivering the training noted that app building is a **skill that is very desirable on CVs**. The demand for developers is very high, particularly at Million Labs. In addition, students get a certificate from Million Labs at the end of the course showing their proficiency in No_Code, as well as their college course.

For students on Level 1 courses, many lack the basic digital and computer skills to get into work initially. These students also commonly have other barriers to overcome such as English not being their first language. No_Code offers these students a **way of learning digital skills without necessarily using English**, as the hands on method makes it easier for students to grasp an understanding of digital and No_Code skills by breaking down English language barriers.

From a tutor's perspective it was too early to assess the extent to which taking part on the training had increased employability generally of students.

When asked about helping find future work students in the focus group mentioned being able to draw on a greater skill set that future employers would find desirable. Amongst those students taking part in the focus group, they expected to work in finance or business or jobs that required maths and economics. They expected that the digital skills they gained would be useful in these type of roles in the future. The course enabled them to shortcut coding and would allow them to develop apps when building their own businesses.

Confidence to work in IT

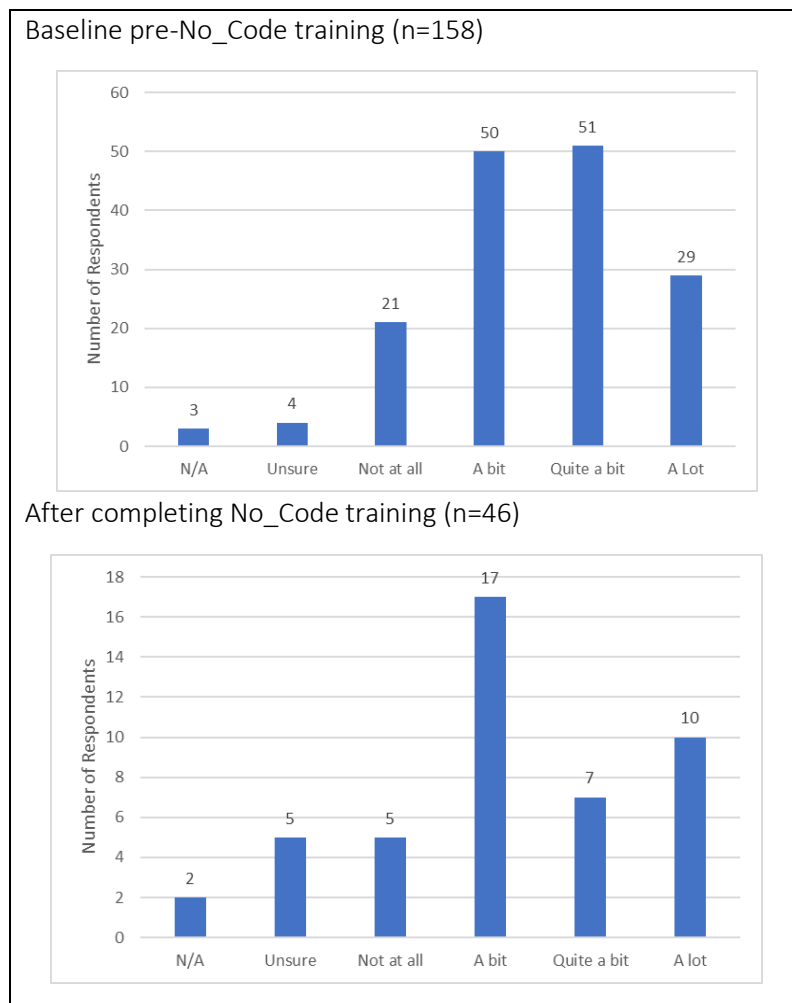


Figure 7: No_Code training and confidence to work in IT

Under a fifth (18.4%) thought that the training would help them ‘a lot’, which is slightly more than thought it would improve their job prospects. Most expected that the training would help give them confidence to work in IT ‘a bit’ (31.6%) or ‘Quite a bit’ (32.3%). Few, (13.3%) thought that the course would not improve their confidence in working in IT. This is surprising given many had never engaged with this type of software before, even those with experience of coding. It might have been expected that those who thought it would help improve their confidence in IT the least would have been those that were more confident in IT to start with. However, the average score of the respondents who said that they did not expect the training to help improve their confidence in IT, was 5 for question 3. Therefore, even people which had admitted they had low confidence in their software abilities in question 3, also thought they would learn little from the course, even though their skills in the area were limited by their own account.

Most students (40%) agreed that the course had given them ‘a bit’ of confidence to work in IT; this is an increase of 8 percentage points from the pre-survey. In the pre-survey 18.4% of respondents stated they thought the course would improve their confidence to work in IT ‘a lot’, whereas in the post-survey this increased to 21.7% in the post-survey. Additionally, the proportion of students who thought it would not improve their confidence in working in IT decreased from 13.3% to 10.9%.

Consider starting your own business

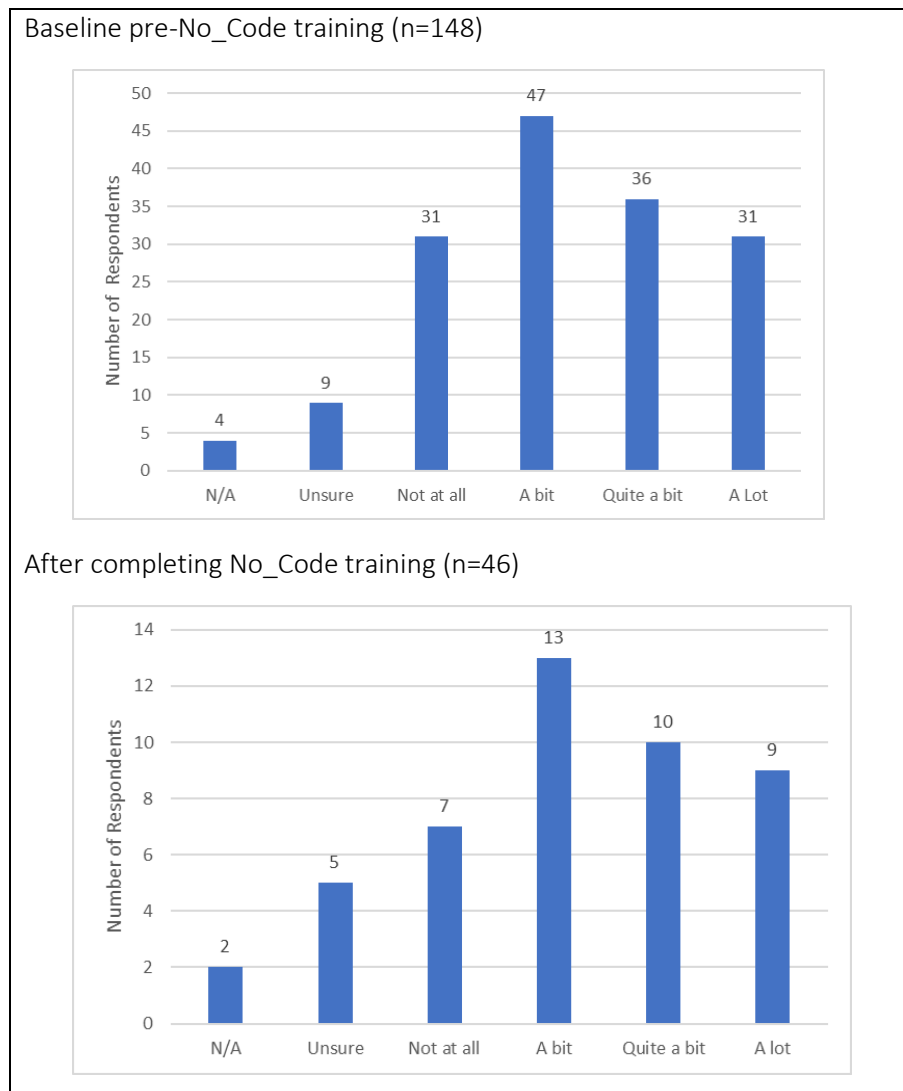


Figure 8: Extent respondents expected No_Code would allow them to consider starting their own business (%)

When asked whether the training would allow students to consider starting their own business, the response was:

- 47 respondents (29.7%) thought the course would help them to start their own business ‘a bit’
- 36 respondents (22.8%) thought the course would help them ‘Quite a bit’
- 31 respondents (19.6%) stated that it would help them ‘a lot’ and the same number also thought it would not help them at all.
- 9 (5.7%) were unsure of whether it would help them set up their own business.

The number of students who thought that the training would allow them to consider starting their own business remained relatively the same between the pre and post survey at around 29%. This was also the case for the number of students who said it would allow them to consider opening a business ‘a lot’: 19.6% of students in both the pre and post survey stated this. Only the number of

people who were 'unsure' between the pre and post training surveys saw a dramatic change, from 5.7% to 10.9%.

Tutors who helped delivered the training reported that taking part in No_Code training may have made their students more entrepreneurial. As with employability, they were unable to point to evidence this was the case given their students had only just completed training. A tutor supporting the delivery of training to arts and design students had a clear view about how participation could improve their students' future work prospects. First, exposure to No_Code will help when they develop their web presence, which is increasingly necessary as they are likely to be working as freelancers. Artists need to be able to sell their work and having a better understanding about how to develop their virtual presence is important. Design students benefit by developing a better understanding of what is needed to build an application when working with future business clients.

Likelihood that students will use the skills they have developed in the future

Over half students (54.4%) were not sure whether they would use the skills they had developed on this course in the future.

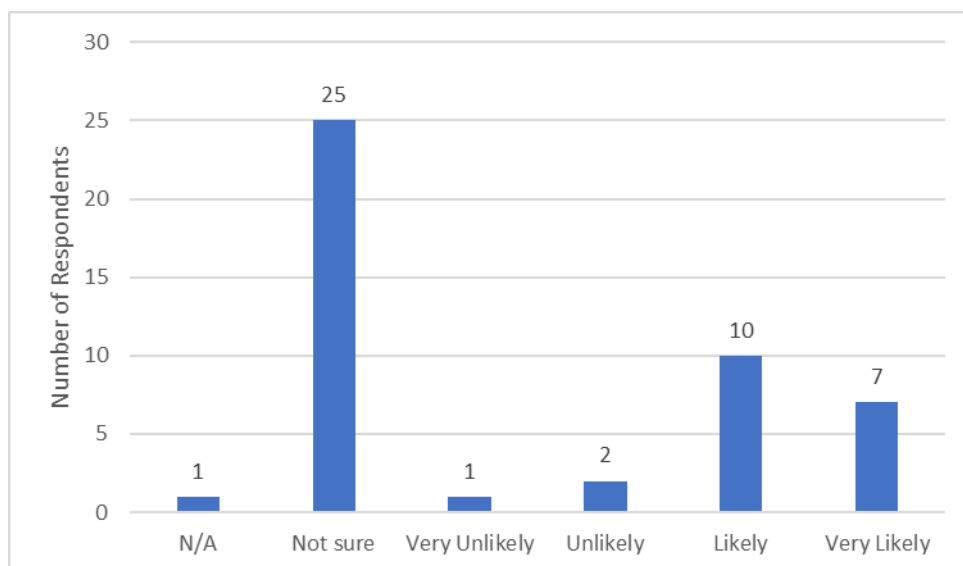


Figure 9: Reported likelihood by students will use the skills they have developed in the future (n=46)

Meeting students' expectations

Two thirds of the students (65.2%) believed that the course met their expectations, by responding 'yes'. Only 8.7% responded 'no' and 21.7% were unsure of whether it had met their expectations.

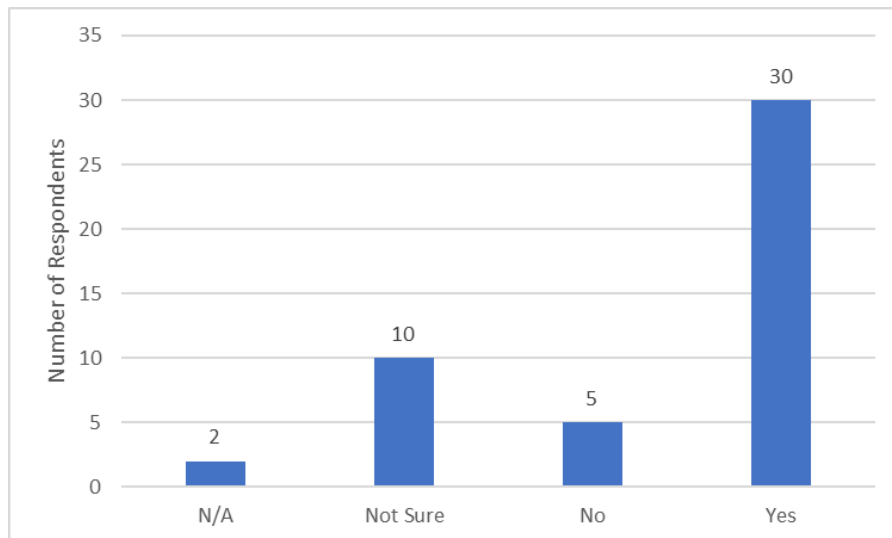


Figure 10: Extent to which students reported No_Code training meet their expectations

Students expected that they would develop, or learn to develop, an app whilst on the course and for a high proportion of students this was achieved, so their expectations were met. A similar number also expected that they would learn how to develop the apps or websites without the use of coding and Bubble helped them achieve this and learn a new skill; so, the course met their expectations. One student who would have preferred to learn coding, who said the course had met their expectations said:

'I didn't expect No_Code to be the best [for] me as I'd preferred to be coding instead; however, I actually quite enjoyed it and felt like I gained a new way of doing something in the future.' (16)

Therefore, even some of the students who were already more comfortable in their abilities saw the benefits to learning No_Code software.

Table 3: How were the expectations met of those that answered 'yes' to question 4a.

How it met students' expectations	Percentage of students
Create an app	26.7%
No_Code software	23.3%
N/A	20.0%
Other	20.0%
Fun/ Enjoyed	16.7%
Expected or wanted to learn code	3.3%
Too Hard	3.3%
Provided support	3.3%

Positively 17% of students stated that the course met their expectations because they found the course either 'fun' or 'enjoyable'.

Of the students who stated they had not had their expectation met, it was either because it was ‘too hard’ or they were expecting to do coding., with some saying the course was easy because they anticipated using coding language and were disappointed when they did not. Participant 12 stated:

‘I did enjoy it and I learnt a lot, but I wish it was actual coding as I feel like that would lead to more opportunities.’

One of the students also highlighted that they had missed a class which had made it ‘*Hard to keep track once you have missed one lesson*’ (22). This was a theme which was also picked up in the focus groups.

Most students who were not sure as to whether their expectations were met, were largely unsure because the software allowed them to build an app but they had expected to build it by using coding.

Most students stated that they enjoyed the training and/or trainer for the course (23.9%). They thought that the course was well organised and structured, with the step-by-step approach easy to follow, especially for those with the least experience. The trainer was also cited as being extremely helpful throughout the training, by communicating the process clearly and offering additional support where possible.

19.6% of students stated that they enjoyed building a fully functioning app, which was largely what they expected to have been able to do by the end of the course.

Table 4: What students liked the most about the course

What students liked most about the course	Percentage of students
Training/ Trainer	23.9%
Developing a functioning App	19.6%
N/A	19.6%
Ease of software	15.2%
New Skills	10.9%
Creativity	6.5%
Teamwork	4.3%
Did not enjoy	2.2%
Website unit	2.2%
No code required	2.2%
Everything	2.2%
Fun and enjoyable	2.2%

15.6% of students stated that they liked the ease of the course the most. They stated that the software was easy to use and engage with. The structure and organisation of the course was generally cited alongside this comment, as part of the reason it was so easy to use.

Some students emphasised that they enjoyed the creative freedom of the course (6.5%), enabling them to design an app which was relevant to themselves and unique to their styles and tastes.

Only one student stated that they did not enjoy the course, as they found it ‘difficult to keep track’. One student simply stated that they enjoyed ‘Everything’ about the course.

The main suggestion offered was in person training. Students thought it would be helpful if the course would have been in person as this would have provided greater access to help from the trainer, particularly when students were struggling.

Table 5: Suggested course improvements from students

Suggestions for improvement:	Percentage of students
No suggestions	37.0%
N/A	28.3%
In person	10.9%
Greater customisation and creativity	10.9%
Not sure	2.2%
Increase course length	2.2%
Pace of training	2.2%
Video clips, written instruction	2.2%
Checkpoints	2.2%
Greater detail on different actions	2.2%

Few other students provided suggestions; 37% of respondents to the post training survey stated that they had no suggestions for improving the course. 28.3% did not answer the question or stated ‘N/A’.

However, one student did suggest that the course could be lengthened. Another suggested that the pace of the course could be slowed to make it easier to follow. One student suggested video clips or written instructions to take you through the app development process step-by-step. Alongside this another suggested greater explanation as to why each step had to be taken. A final suggestion was inclusion of checkpoints to make sure that nobody had fallen behind or made a mistake within the app building process.

Would students recommend the course to their friends and why?

There was an issue with the collection of these answers from Dudley College. Unfortunately, the last question was missing from the Dudley College responses which meant that almost 40% of the answers from respondents were missing. Even so, over 40% of the total respondents said that they would recommend the course to others and only 2% said they would not. 16% were unsure whether they would recommend it.

If we remove the missing responses from Dudley College from the total responses, then 67% of respondents from both BMET and Walsall College stated that they would recommend the course to others. Only 3% said that they would not.

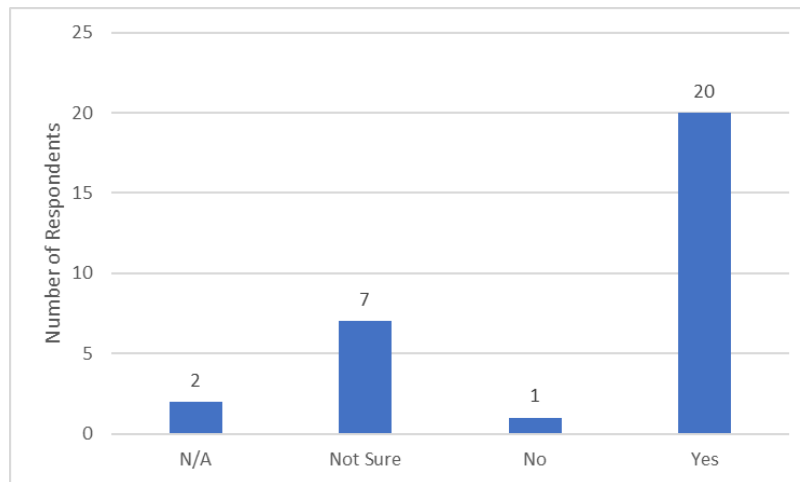


Figure 11: Responses from students as to whether students would recommend the course to others (excluding those who did not answer)

Reasons given for recommending the course included:

- **Interests** For those who would recommend the course, most said they would recommend it to friends who had an interest in the area, stating that it would be most suitable for those who were interested in app development, IT or coding, and/or those looking for a career in one of these areas.
- **Beginner and new skills** Some that said they would recommend the course and also stated that it would be a helpful tool for beginners. For those who do not have advanced skills it would be an easy tool to use to effectively bypass the need for advanced skills which would otherwise be necessary. Some also said that for even those with experience it would provide them will a new skill, which might make them more attractive in the jobs market.
- **Easy and Fun** Students who would recommend the course said they would recommend it because it was easy and fun. The software was easy to use and engage with. The course was fun because it provided them with the skills to build an app or website without extensive coding training needed. The course overall was fun and engaging and they would recommend it to their friends as a result, especially those with a keen interest in IT or app development.
- **Not sure** Of those who were not sure whether they would recommend it to a friend, it was largely because they thought their friends would not be interested in the subject area. They stated that not many of their friends had an interest in web design or app building and therefore they would be unlikely to recommend the course to them.

Tutors' willingness to recommend No_Code training for future student cohorts: Tutors involved in delivering the training would like their college to continue providing No_Code training – not just for students but also to colleagues who could also benefit. However, they were aware there might be issues around funding. They mentioned that there was flexibility with regards to exam boards that would allow them to incorporate training in the curriculum. They enjoyed taking part in the project and had a good feel of how training could be delivered to future student cohorts and commented the teaching resources that were developed were really good quality.

Benefits for partner colleges

Dudley College thought that taking part in the pilot would set it apart from other colleges in the area and this contributed to their vision for their Inspired Campus being all about “moving forward” and “equipping student with skills for the future”. There was less engagement by senior management once the training was agreed, with responsibility falling to tutors to ensure students had as good a learning experience as possible. From their perspective they felt the training provided through No_Code contributed to:

- their learning provision for students that is linked to future work
- their students’ wider understanding of coding
- knowledge of technologies that students can use in a commercial environment

Whether colleges decide to continue with No_Code training will depend, in part, on acceptance of the training to local employers. Ensuring provision is cost effective and its acceptance by students as a form of work-related training and possible alternative to Microsoft qualification is important. Tutors reported that they would like to see the training continue but would like it to be expanded to include Python to take No_Code further. However, this would need buy-in from senior management and a shared cohesive vision as: ‘One person alone cannot embed the training in the college, no matter how much passion and time you put in’. Python, being a coding language, is also a potentially confusing message that would need careful design consideration.

Some tutors thought their college could potentially continue delivering and scale up training as long they invested in INSET training and secured necessary budget. Tutors from another college were concerned their college lacked IT technical support capability to scale up.

Benefits to Million Labs as leader of No_Code approach

The benefits of the pilot of No_Code training with colleges was learning how to develop and deliver a training curriculum for young people. This included discovering what students liked about Bubble and whether they wished to use it. There was also benefit of immediate feedback and from their trainer’s perspective observing the delight when they published their app on their phone in week 6.

Another benefit for Million Labs is providing a **potential future pool of freelance developers** they can draw on for B2B apps. No_Code training can help close the skills and aspiration gaps within BFPS sector in several ways. First, it provides more entrepreneurial students with exposure to the possibilities of developing commercially viable apps. Second, the training allows students to develop the sense they can build their own app should they wish to do so using the No_Code approach, thereby providing a greater sense of agency. This was achieved by providing examples of young people who have developed their own apps that have been very commercially successful - including an ice cream van tracker developed in the USA using the platform. It is anticipated, based on discussion with students, that several will work towards becoming accredited to be on Million Labs freelance bank, thereby providing future work opportunities.

What worked well and what were the successes?

Tutors noted that the *'trainer was helpful and amazing and slowed the pace and repeated parts'*. They also referred to the pre-class notes as being helpful in preparing to co-deliver the training. Tutors were only just keeping ahead of their students so that they could help. Having the notes earlier or all in one go would have been helpful as tutors felt they were learning as they went along.

The trainer referred to **ease of learning how to use Bubble and No_Code** enabling the trainer and tutors to pick up the basics and teach it to students quickly and easily. It can be difficult to engage students in programming but No_Code captured their imagination. No_Code encouraged students to be creative and break out of their tunnel vision for looking at future careers. Students often think in terms of qualifications but were able to look at a potential career and the course could help with that.

The **structured method of the course worked well**. Even though some students were at different stages the tutors could check in and make sure no-one was left behind which improved the confidence of the students more.

Confidence of students increased and the students enjoyed seeing something that they are good at. Every student that applied to be part of the Art and Design cohort completed. This was achieved by ensuring every session was recorded so students could replay them and those students working on other projects preventing them from attending a session could catch up. Class notes were shared with students before the session. Those who 'got' No_Code easily provided peer tutoring/support to their fellow students – it was a very collaborative and supportive group that knew each other well.

Future enhancements include **the scope to build training around a collaborative venture across the College departments** drawing on complementary skills being taught as part of the wider curriculum. Such a venture would develop important soft skills required by students for future work around collaboration and negotiation. The example provided was the production of an app for a fashion event that would draw in fashion students (produce clothes), photography students (develop images) and design students (who work on the interface) and potentially other students.

Issues and challenges

Most of the issues and challenges have already been set out in the preceding sections. A summary table of issues and challenges can be found in Appendix G.

Opportunities

- A. **Development of differentiated learning material for different student groups.** The course was designed to develop the skills students need to do their own project. The trainer noted in future there needed to be a different approach and curriculum for creative students which, while maintaining a linear approach, allows them to draw on their creativity such as their design skills. The trainer suggested in a future stage of No_Code it should be possible to modify the course to enable this. The trainer has explored with college tutors how to provide more creative space. To do so would require the trainer delivering the course in situ as necessary modifications could not be delivered remotely. Tutors also mentioned the need to differentiate training for

different groups of student groups, including considering the subjects they are studying and differences in ability and backgrounds. There was not the need to target more disadvantaged students – as might be expected for Community Renewal Funding – as the colleges in the project were already recruiting students from diverse backgrounds. It was felt there was a *'need to pitch [the training] to the right students at the right time'* and a *'need to offer to everyone with a slight level of interest.'* Tutors, like the trainer, stated the need for a differentiated course material for design students focusing on say interface design and business students who would benefit more from a focus on the entrepreneurial side and commercialisation of their app.

- B. **Developing links with college (and other) work placement units** to create opportunities for students to consolidate skills in a workplace setting with interested businesses and employers.
- C. **Involving students in developing apps for their college** including social media that provide information to students and their families.
- D. **Potential for buy-in from other colleagues at the college to deliver No_Code training** and teaching in the future. Connecting with the Bubble Academy would be an opportunity to support the delivery of No_Code training through interactive lessons for trainers to use. Tutors would like to see training continued. It would be possible to adapt over time by building around collaborative projects and also differentiating training by department and linking to opportunities in readying students for university, placements, etc.
- E. **Embedding No_Code into the wider curriculum** by linking directly to content being taught in courses being studied by students. Alternatively, No_Code could be a standalone subject in the curriculum. No_Code does not need any extra resources or capacity so, once the trainers are trained, it is able to be used in a course relatively quickly and with no extra cost.
- F. **Development of a follow-on masterclass / advanced course for those students applying their learning to their own projects.**
- G. Development of a **portal as a resource with recordings of online sessions** that tutors can use to prepare for sessions and refer back to as they how deliver training in Bubble.

Areas for future development

Students would like to be able to develop a live and operational app and be able to draw upon their creativity. Students would like **greater creative freedom** in the future to work their own idea for an app rather than follow a recipe for an example application, though it was accepted that initial training would need to follow this approach to provide a foundation stage. This foundation stage could be followed up in future with something more akin to a masterclass approach where interested students could develop their own ideas.

They would also like to ensure in the future that they will be able **to create and publish a finished product**. While they found it exciting to be able to access the app they worked on via their phone, not being able to publish it because of the fee – seen as relatively modest at £300 – resulted in the apps not going live in the end; they found this disappointing.

Consider **integrating the course with other aspects of students' learning so as to engage students more**. The students who took part in the focus group were doing business studies and the course could have stressed more the entrepreneurial side of app development, for example, or have been linked to a project they are undertaking elsewhere in the curriculum. This would allow students to relate it back to their learning in other topic areas.

Students would like the **opportunity to talk to employers or entrepreneurs who have used Bubble or who were using similar software to develop apps** without a great level of coding knowledge

required. This would have helped them to see the real-world applications of the app, thereby allowing them to better understand the possibilities and potential applications that have made a difference. Bringing in an industry representative to convey the benefits that having such skills would have on students' employability would have been useful.

Reflections

At a macro level, this activity overachieved on the targeted outputs from inception to the end of the pilot. Furthermore, there is clear potential from the pilot for No_Code to add value to learners within an FE setting. From this strand of activity within the No_Code pilot, the key reflections include:

Learnings for funders

- The project has done very well to deliver outputs within the original contract period with a very onerous schedule. The delayed award decision-making had serious consequences as it removed the ability to mobilise during a quiet period of the academic calendar; many of the challenges/ issues in the feedback can often be drawn back to this point.
- In addition, the late notification of the no-cost extension to the delivery period was of no consequence to this aspect of the project as everything had to already be time-tabled by March 2022 when notified and extending beyond 30th June was into a period when learners would not be in college.
- As reported in the monthly updates to the WMCA, the failure to recruit adults, specifically targeted bootcamp delivery (2 days as opposed to weekly delivery) feels like an opportunity missed on the pilot. Partly due to the delayed decision making which reduced capacity for college partners to experiment with other recruitment models, but one college did actively try to engage with DWP to trial this approach, but the referrals did not flow so it did not take place. In the current economic landscape of near full employment, training providers generally are commenting on the lack of referrals for adult courses, so appetite to revisit this is low without additional support to ensure participation.
- Entrepreneurial outcomes from training activities require greater longitudinal monitoring than allowed for within the grant award design. The tight programme dictated a focus on achieving outputs, but it is not realistic, particularly within such a short delivery window, to also see outcomes. There are indicators of this including, arts students setting up apps to market their work and support a transition to a freelance career. There is no provision to monitor this within the grant.

Learnings for partners

- Need to ensure greater consistency of internal communication and bridge gaps between leads on the project who are more externally facing and internal delivery staff.
- Keeping senior college staff who were initially involved in the pilot engaged and visible.
- GBSLEP was supportive of the wide-ranging approach to recruitment as part of the pilot and encouraged all partners to reflect on their institutional insights in the above as to how to take the content forwards.
 - The No_Code pilot has provided a real opportunity for colleges and learners to engage in a segment of the frontier of technology development and GBSLEP's application has provided important leadership and funding to make this happen. Many of the learnings are for college partners to reflect on alongside Million Labs as the training provider. In this respect, the insights indicate that leadership needs to shift into the participating institutions for the future to navigate how No_Code can fit in with the college offering, the funding landscape and needs of employers/ self-employment routes.

(2) Ideas2App – Super Tech Seeds

Our assessment of this aspect of No_Code programme is based on management information, observations of two sessions, discussions with participants and ten founders who completed questionnaires.

The original plan allowed for capacity for twenty business ideas to be accepted onto programme. As a result of the no-cost extension in March 2022 and rigorous procurement, it was possible to create an additional three spaces funded by CRF with additional match funding from WMCA’s West Midlands Innovation Programme for one more space meaning an additional cohort of four places was released in June for applications.

Applications for places were received at a ratio of approximately 4:1 across the two intakes. Table 6 below summarises the intake demographics in terms of gender, ethnicity and age. No_Code as a force for good in attempting to democratise the entrepreneurial ecosystem by greatly reducing the barriers to tech development was a key theme in the original application to the CRF. Intake 1 really achieved in this domain, with a better gender balance, age and representation of regional demographics than is normally associated with early-stage tech founders in the BPFs sector.

Interestingly, Intake 2 was less positive in this regard although it is a far smaller sample. Due to the speed of movement required to enable the extension places, the recruitment process was less intensive and personalised, which was a key difference between the other intakes. Other aspects were the same.

Table 6: Breakdown of participating founders in Ideas2App by age and ethnicity

No. of participants	<p>Intake 1 (March 2022 Recruitment)</p> <p>28 founders (20 participating businesses/ business ideas on programme, 12 female (43%) and 16 male (57%))</p> <p>Intake 2 (June 2022 Recruitment)</p> <p>5 founders (4 participating businesses/ business ideas on programme, 1 female (20%) and 4 male (80%))</p>
Age	<p>Intake 1</p> <p>10 (35%) age 16- 24</p> <p>5 (18%) age 30-34</p> <p>8 (29%) age 35-39</p> <p>3 (11%) age 40-44</p> <p>2 (7%) age 55+</p> <p>Intake 2</p> <p>1 (20%) age 16- 24</p> <p>2 (40%) age 40-44</p> <p>1 (20%) age 44-49</p> <p>1 (20%) age 55+</p>
Self-reported ethnicity	<p>Intake 1</p> <p>13 (46%) White</p>

	6 (21%) African
	6 (21%) Asian
	2 (7%) Asian British
	1 (5%) Black British
	Intake 2
	5 (100%) White

Impressions from observations

Two sessions were observed: the second SuperTech Seeds event held on 25th May 2022 and the SuperTech Demo and Pitch event on 30th June 2022. Both events were hosted by partner organisations in the SuperTech West Midlands network.

Founders at the SuperTech Seeds event were at different stages of the development of their ideas and were able to draw on a range of expertise and advice from attending experts representing the organisations listed in Box 1. The event was set up along the lines of speed dating in which representatives from the organisations listed below had tables which founders could move between. At the Seeds event, we were able to observe discussions by founders relating to the development of their business idea into a minimum viable product with a panel of experts who could advise on topics such as financing (debt, venture, eligibility for grant funding), legal issues (company formation, intellectual property), minimum viable proposition (customer proposition, initial market opportunities to focus on first), payment solutions, designing the back engine of their app, disruptive applications of technologies, and managing the innovation process.

Box 1: Attending organisations at SuperTech Seeds Event

<ul style="list-style-type: none"> • HSBC • GBSLEP Growth Hub • Beyond Brand • B13 Technology • Harrison Clark Rickerbys Solicitors • Midlands Engine Venture Fund • The Investment Association 	<ul style="list-style-type: none"> • Whitecap • Million Labs • Business Engagement, University of Birmingham – former marcomms fintech expert • GBSLEP • Swoopos • The FSE Group • Innovate Edge
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Specific examples of discussions on specific business project observed included:

- The development of the value proposition for the AstroChain mobile app that allows interested members of the public to book a slot with a telescope involved in sky scanning for a specific time and location to take an image of specific event of interest and convert into a non-fungible token (NFT) with the image encoded. The AstroChain app allows those who cannot travel to capture their own unique videos of activity such as the breath-taking Aurora Borealis or meteor showers, all while bridging the gap between space and NFTs by using Blockchain to prove ownership of the captured video and data. The discussion observed included exploring MVP including the concept, technical aspects, likely customers and their expectations and this would shape demand.
- Pivoting of a Wellbeing B2B app under development to support businesses to respond to the wellbeing needs of their employees. We observed discussions with a business angel focused on value proposition, which sectors to target, how to position the app to avoid any potential regulatory hurdles that might be created if the app was deemed to be a specific class of

medical technology, and who to target first in terms of business need and ability to generate the evidence that future potential customers might need. The second discussion was with a representative of a financial organisation focusing on the merits of debt finance over equity finance at the current stage of development.

- A founder set out the need for the Ethco app she was developing for small Asian store owners who were working long hours and currently using manual systems to reorder goods from wholesalers' catalogues using Electronic Point of Sale (EPOS) as the front end. She had identified that store owners had limited technical skills but were familiar with EPOS, thereby making a good platform for them to engage with the digital marketplace, and introduce automatic restocking based on recorded sales. The representative from Million Labs talked her through the building of the back end of a system and a follow-up conversation with another advisor focused on applying to Innovate UK for a grant to support the development of her innovation.
- The development on digital asset depository for children, including parent digital legacy and a digital record of milestone achievement. The discussions observed covered funding for initial proof of concept and how to educate parents about the benefits of setting up a digital asset depository, intellectual property and trademarks. A follow up discussion with the founder established they had identified three stages of development based around three opportunity areas: parents, organisations such as schools, and the child. The first stage includes financial digital records (inheritance, bitcoins and assets). The second stage encompassed academic achievements and a record of achievements, including storing certificates. The third stage concerned educating individuals and organisations on the benefits of an app (for grandparents, parents, schools) who can be provided with a unique log in to enter assets. The founder had previously taken part in a Birmingham City University programme.
- Discussions that covered access to finance, including establishing a proposition and credibility; investment readiness (project plan, milestones, financial milestones and a fundraising document); investor/ funding introductions; and steps needed to have a minimum viable product by investor day.
- Discussions on pricing strategies - including knowing what costs need to be covered and understanding what the market will bear and marketing strategies.

Assessment by participants

Ten questionnaires were completed by participants of the SuperTech Seeds programme at the demo day at the end of their programme. Founders had produced their minimum viable product and launched their No_Code app in a pitch to potential investors, stakeholders, and customers. At the event, participants completed questionnaires on their experiences of the programme overall.

Founders quoted that **the three main reasons for taking part in SuperTech Seeds were: to help the business to grow, to become a market leader, and to develop a viable business proposition**. This shows the founders are ambitious in believing their venture was scalable and achievable. The cohort comprises ambitious individuals.

On the other hand, founders had very **little knowledge of Intellectual Property** and only one founder quoted that protecting IP was a main reason for getting involved in SuperTech Seeds. Similarly, only three founders stated that their main aim for getting involved in SuperTech Seeds was to help their existing business remain competitive. This is likely because lots of the founders were new to the

business development world and, firstly, did not have an existing business prior to No_Code, and secondly did not have an in-depth awareness of IP. Through the programme, founders have set up a business that is incorporated and registered for investment. I has provided founders with knowledge of the importance of protecting their knowledge and IP. These are benefits founders developed over time.

In terms of founders' progress against their main objectives, founders **made good progress** against:

- Developing a viable business proposition
- Developing a business plan
- Starting up a new venture
- Being in a better position to exploit market opportunities
- Accessing new technologies or platforms
- Networking and developing peer support

Founders on average stated that they had **either fully achieved or made really good progress against these six objectives**. The objectives which most founders felt they had "fully achieved" against were: *Developing a viable business proposition* and *Starting a new venture*. The added value of Million Labs creating a minimum viable product is clear in helping achieve those objectives.

One of the mentors observed that participants were asking for an average of £100,000 investment from their investors and observed should just five founders receive funding from investors from the SuperTech Seeds demo day this would cover the investment by the Community Renewal Fund in the No_Code project. If considering this within the allocation of funding to this particular strand of activity, only two -three investments of this scale would provide a return. The excellent co-operation between Million Labs, GBSLEP and founders was noted as being a source of added value for the founders. In particular, the following themes were explicitly mentioned by founders as the benefits of the programme:

- The **speed of development of a minimum viable product** that is free for founders. No_Code makes the development of the MVP quicker and cheaper than fully coding.
- Excellent **networking opportunities and events which are much better than other events** at other organisations (across the country, not just in the West Midlands).
- The excellent **supportive culture from the wider project team** made sure that the project ran smoothly and helped allay worries from founders as they went through the development process.
- No_Code **simplified the development journey of going from a business idea to creating a user friendly and investable app**. This supported founders who were working alongside other jobs and/or had little or no previous experience of running their own business.

When asked about the improvements to the programme, half of founders interviewed initially mentioned that they were not able to fault the overall running of the programme. When probed further, the founders did give some additional pointers for improvements in the future. The discussion points surrounded:

- **Broaden the networking events further to be able to meet even more people.** This discussion point was particularly the focus for people who were from outside the UK or who had recently graduated from university and were at the start of their networking process in the West Midlands.
- Founders would have **preferred to meet with more investors at the events.** Even though the founders were very pleased with the range of events overall, investment is something all

were chasing. It was noted that a key aim of taking part in the range of events was to be able to meet potential investors.

- **Programme structure.** The founders would have appreciated a clear project timetable and outline of the project from the start. This is because many founders were also working in other jobs and as such would have found a clear timetable and plan beneficial when managing their own time.

Overall, the founders judged the programme as excellent, with 100% saying they would recommend the programme to others in the future. The fact that 60% of the founders responded with positive comments even when they were asked and probed for improvements is testament to the quality of the scheme overall, particularly as founders stated that they “could not fault” the process as “overall there was not too much to improve” since “everything was really good”.

Reflections

Key reflections are as follows:

Learnings for Funders

- The delayed award notice by the funder had less impact on the SuperTech Seeds strand of the programme because there was more flexibility in delivery as the activity was being delivered with the private sector. This afforded greater agility in terms of project management than was possible with colleges delivering training for young people who needed to plan delivery within existing educational programme for their students.
- Issues around contracting, specifically delays in the issue of the contract, had knock on impacts on the procurement strategy and implementation. The delivery of the project initially was very dependent on goodwill previously accrued with the project lead having to proceed at a level of risk that they found uncomfortable. This risk was mitigated by higher level of management input from GBSLEP lead to minimise the impact by ensuring partners delivering this strand were sufficiently prepared to be able to mobilise quickly to meet the very tight delivery programme. In future funders need to be able ensure contracting can proceed more smoothly with an appropriate level of due diligence. The risk of potential delays in contracting needs to be factored into the commissioning process.
- The Super Tech Seeds (Ideas2App) strand of activity has been the primary generator of outcomes within the programme period, creating new businesses and enabling businesses to have new products/ services to launch to market. Whilst leveraging investment is a stated outcome of the project it is much more distant in nature to the activity compared to the other two. In fact, the other two outcomes – company formation and new products services to launch to market – are both necessary precursors typically affect the third investment outcome.
- There was a disconnect between the contractual outputs required by the funder and the programme being delivered. This may have come about because of the ambitions of the CRF, resulting in a formulaic set of outputs that can be aggregated at fund level but were not adapted to realistically reflect the short timescale of the project and activities being delivered. The monitoring and evaluation framework developed by the CRF programme manager and contractual outputs that did not always align with the aims of the No_Code project. The project was funded to support an innovative approach which was sector led. Some contractual obligations were too specific to achieve within the tight delivery timescale.

Learnings for Partners

- The programme is an example of best practice for future joint ventures in that it addressed diversity and inclusion aspects of the founder experience in the West Midlands. The cohorts supported, taken together, are far more representative of the region than the BPFs sector currently and the tech start-ups within it. To achieve this a more intensive approach to recruitment was required. This meant investing time in speaking to every applicant founder to understand their proposition and ambitions. The additional four places funded by CRF and in part by the West Midlands Innovation Programme were selected via panel review as there was less time for a second recruitment phase for the extension cohort. The outcome of not being able to invest the level of time in initial conversations with applicants resulted in a noticeably more male dominated and White British cohort.
- Recruitment of business founders from different backgrounds – including founders who had been through accelerators, with varying levels of experience of accessing and using intermediaries in the region’s business and innovation support ecosystem, and individuals with a business idea who were completely new to setting up a business, as well as reflecting the superdiversity of greater Birmingham region. This diversity improved the quality of peer support within Ideas2app which benefitted from mentoring provided by experts who provided their time. The level of benefit-in-kind provided by SuperTech network and that founders provided each other through peer support during the development of their business idea was high.
- Level of mentoring made available – the coordinator for SuperTech Seeds was the first person founders could turn to for almost everything - from payment structures to branding, and market research.
- The level of applicants for the programme who had already formed a company was much higher than anticipated. Many of these companies had still to start trading and therefore were able to benefit from the programme considerably. This means company formation should not be downgraded as an outcome of support. This underlines the need for detailed discussion with applicants to understand which stage their business is at in terms of its development.
- Ideas2App (marketed by SuperTech Seeds) is just as relevant to existing businesses even though initially the partners thought these businesses would be more interested in, and better served by, the hackathon. At least two participating businesses selected onto the programme were actively trying to pivot their business model and create new service lines - for example, a public relations agency trying to scale a software-as-a-service (SAAS) offering and a business providing leadership training developing onward touch points and services for their clients that had participated in person courses. Both of these are examples of BPFs firms trying to scale their business by pivoting away from simply selling time to more value-added services, as availability of saleable time is a restrictor of growth in the sector. A distinction may need to be made between businesses that have relatively straightforwardly defined business needs in terms of having an app to support the digitalisation delivery of a specific internal business function or B2B service they supply who would benefit from hackathon approach, and those that need a wider package of support to accelerate the commercialisation of a new innovative B2B product or service.
- Participants valued, and had strong expectations around, having quick and facilitated access to investors and ability to do so is crucial to attracting entrepreneurs with good ideas. Providing a facilitated journey or route with a guaranteed opportunity to pitch is not without risks. Because of the relatively short period, some were inevitably not ready to do so having not had sufficient time to fully developed some aspects of their wider business. SuperTech was highly successful in leveraging offers of support through its members and wider network and had the Entrepreneur in Residence in post to provide wraparound support.
- The gap in the market Ideas2App was trying to address was not incubator support services/ accelerators but instead the provision of access to relevant technology to deliver a business proposition without necessary having to raise funds. This remains a very an important gap, but could have been addressed by including an incubator type partner capable of providing a more cohesive offer.

- Having an end of programme pitch day was a significant milestone that focused participants and brought people together as a cohort, which was clearly valued. This injected the necessary drive that underpinned delivery of outcomes and a key learning to take forwards to mitigate against drift.
- Leveraging existing networks to come together to support founders developing FinTech, PropTech, EdTech and ProfTech, SuperTech was able to draw on its members to provide mentoring and guidance to founders developing their idea into a minimum viable product. Because of these networks and linkages, it was possible to launch SuperTech Seeds (Ideas2App) at scale within 6 months with 20 founders taking part.

(3) SuperTech Brum PropJam - a No-Code Hackathon Focusing on Property Tech in the West Midlands

The No-Code Hackathon was marketed as SuperTech Brum PropJam and was advertised as requiring no experience required. It took place on 14th June 2022 at ICentrum, Birmingham. SuperTech is a regional partnership that showcases the talent, innovation, and investment potential of the West Midlands' rapidly emerging professional services technology cluster. The one-day event was delivered in partnership with:

- UK PropTech Association a not-for-profit membership organisation set up in 2018 whose goals are to drive the digital transformation agenda within the property industry by promoting engagement between PropTech and Property businesses and creating a conducive environment for PropTech innovation.
- Bruntwood SciTech, who provided the venue. They offer high quality office and laboratory space, a range of scientific services, and specialist business support which enables companies in the science and technology sector to form, collaborate, scale and grow, access to finance and funding, highly skilled talent, accelerated market access and direct new connections for your business. The Innovation Birmingham Campus is a digital tech campus, home to over 170 businesses, in the heart of the Knowledge Quarter. Innovation Birmingham offers coworking, office space and business support for digital and tech businesses to form, scale and grow. It is close to Aston and Birmingham City universities in the heart of the city's Knowledge Quarter.
- Engine, **part of the Investment Association “powering fintech, revolutionising investment”** - Engine connects best-in-class FinTech innovators to forward-looking investment managers to transform how the world invests.

Hackathons need themes to be successful and No_Code was a theme, but in the context of hackathon delivery is more of a method of hacking than a thematic area to hack around using No_Code tools. PropTech was chosen because it is a domain area of interest to the West Midlands and hackathons was a specific recommendation in a CBRE report on the Strategic Opportunity for PropTech in the region.⁹ The partners had existing relationships which were leveraged to create challenges and bring domain expertise into the hackathon.

Twenty businesses and organisations from Birmingham, Walsall and Dudley took part, of which half (10) were small businesses and the remaining participants were made up of representatives from four medium sized, four large businesses and two organisations. It was delivered by a specialist hackathon manager, based in the UK, who had run over 250 hackathons, conferences, workshops, meetups, and similar events.

Brum PropJam was marketed as a hackathon focusing on how No_Code development can impact property technology and is open to all, including those with no experience of software development, and offering the chance to learn, build, and share new ideas. The event was structured around three challenges (described in Box 2) in which participants would engage as a team constructed on the day.

⁹ The CBRE report was commissioned by GBSLEP as part of its wide BPFs policy work in the sector. More on this can be found here, including access to the report summary. <https://gbslep.co.uk/news-and-events/news/gbslep-publishes-blueprint-to-unleash-the-potential-of-proptech-in-the-west-midlands/> [Last accessed 26.9.22]

Box 2: Three challenges set for Hackathon

CHALLENGE 1 - MAKING DATA MORE APPROACHABLE: Build a project that makes the collection, analysis, and understanding of data around sustainability more approachable. You can choose to focus on any area of the property lifecycle - from planning and development through to completion, occupation, and ongoing usage. You may also choose to think about either data held by an investor on their own portfolio, or data available to the public.

CHALLENGE 2 - UNDERSTANDING THE PURCHASING JOURNEY: Build a project that helps those purchasing property more easily engage with the process. The process of purchasing a property, either as a commercial or personal investment, can be complex. From understanding government schemes for supporting people buying their first home, to digitising often paper-based processes, we believe tech can provide exciting opportunities to both support financial inclusion and understand what is happening after a deal is struck.

CHALLENGE 3 - ENSURING RESPONSIBILITY & ACCOUNTABILITY: Build a project which supports accountability of property owners and developers. Property developers and owners are needing to be more accountable than ever, both from public demand and upcoming Accountable Persons legislation. This challenge looks at both supporting owners and developers to ensure they are meeting expectations, and to give citizens the information they need to feel happy and safe.

Assessment by participants

Twenty-three attendees completed the questionnaire distributed at the event.

Awareness

Participants mainly became aware of the Hackathon through social media or through being recommended the opportunity by friends or colleagues. The questionnaire had predefined response options. Two-fifths (39%) stated that they found out about the Hackathon through social media. The most selected option was 'other please state' by 13 (57%) participants who completed the questionnaire. Most of these (7 of the 13) had been referred to the Hackathon by a colleague or friend. A third (4 of the 13) had found out directly through the organiser of the event and 1 stated they had found out about the course through work. Of the remaining response options, the following options were each chosen by one person: news coverage, Business advisor/ Accountant, or the newsletter.

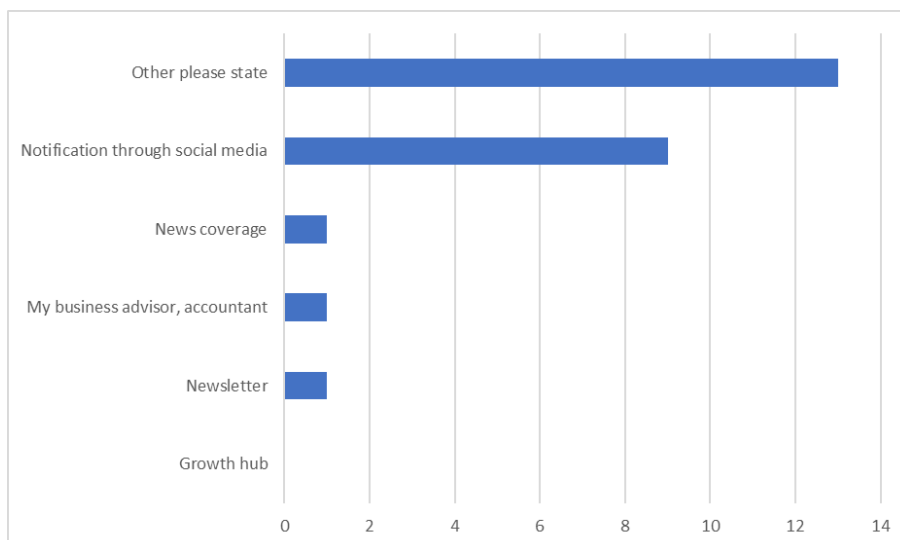


Figure 12: Number of participants which become aware of the Hackathon through different sources

Pre-event information

Most participants found the information received in advance ‘very useful’, with 52% (12 of the 23) selecting this option. 39% (9) found that the information they received in advanced was ‘useful’ and a final 2 (9%), found the pre-event information ‘moderately useful’. Therefore, all participants found the information at least ‘moderately useful’; none of the participants found that the information was not useful at all.

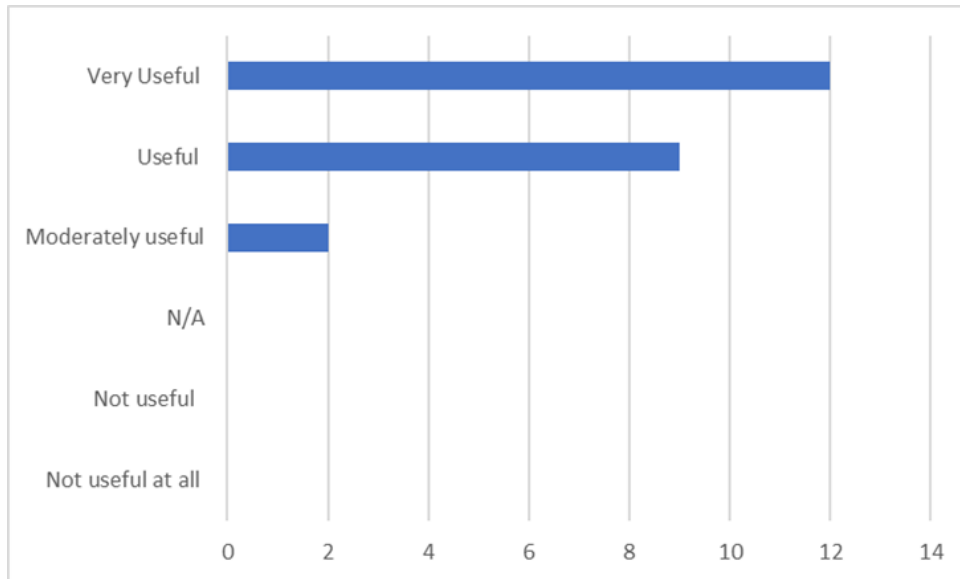


Figure 13: Number of participants which found the pre-course information helpful

Expectations from participation

Expectations can be broadly grouped into three areas:

- **No_Code**

When asked what they hoped to gain from the Hackathon, most participants referred to learning more about No_Code, with the aim of developing their No_Code knowledge, but also their skills to help them more easily tackle challenges they face within the PropTech sector. An example is: learning how No_Code could be a “*stimulant for innovation in the sector*” (participant 7). Therefore, for the majority attending the session, they hoped to first gain a greater knowledge of No_Code and how it can be used to tackle the challenges they face. They then hoped to develop the skills to use No_Code so that it might be able to be applied to their own business operations.

- **Networking**

Several participants saw the event as an opportunity to network with others within the PropTech sector. This was the case especially as those attending this event would be interested in similar subject areas to them and it would offer the opportunity to discuss how others in the market would use the technology to improve their business. This included learning more about what SuperTech was and how it engages with businesses within the sector.

- General PropTech

Many saw this as an opportunity to understand what technology was current available and in use within the sector. They saw it as an opportunity to expand their potential technology base whilst networking with PropTech experts to understand how the different technologies can be used to improve business operations.

Aspects which interested participants

Most (15) of the participants specified that No_Code was one of the aspects of the Hackathon that most interested them. This suggests that most participants participated to gain a greater knowledge and understand of No_Code and how it works.

The aspect which second most interested participants (10) was Challenge 3 which focused on responsibility and accountability of owners and developers. They wanted to see how software like No_Code could more easily help them to track the tasks within a project assigned to each person, to ensure responsibility and accountability for outstanding tasks. Challenge 2, understanding the purchase journey, was the aspect third which most interested participants. Nine said they wanted to be able to build a project which enabled them to make the purchasing of property a process that was easier to engage with. Of the three challenges, challenge 1—building a project which makes the collection, analysis, and understanding of data around sustainability more approachable – was considered the least interesting but it should be noted there was very little difference between the challenges in terms of reported interest by participants. Finding out about PropTech generally was the least common response overall. This would suggest that the majority came to the event with a specific challenge they wished to tackle and were less concerned with the general PropTech that was available.

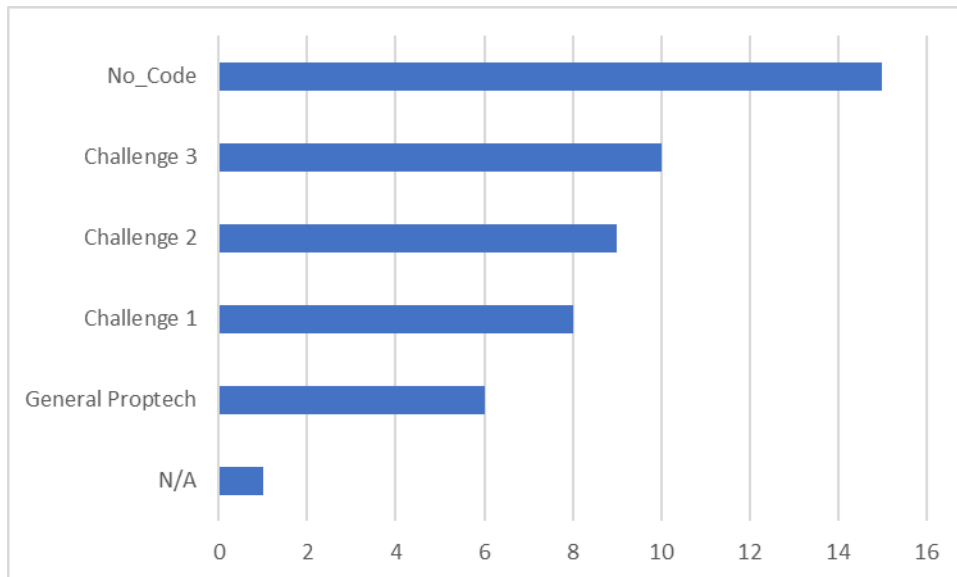


Figure 14: Themes which most interested participants

Which business objectives apply in the reasoning for participating

Nearly all attendees took part to develop their skills. 21 of the 23 (91%) selected this as a reason for attending the Hackathon.

Two-fifths (9, 39%) of those attended the Hackathon mentioned that they had a **potential business idea involving an app and wished to assess the feasibility of using No_Code approach** to develop and test that idea. However, only 3 saw the Hackathon as opportunity to test the commercial feasibility of their ideas and this may be because the event was organised around the three challenges. A fifth mention (5, 22%) referred to taking part in the event because they were planning to grow their business, with the same number of people also stating that they wanted their business to remain competitive and 3 had ambitions to be market leaders and therefore were interested in how developing an app would help them achieve that.

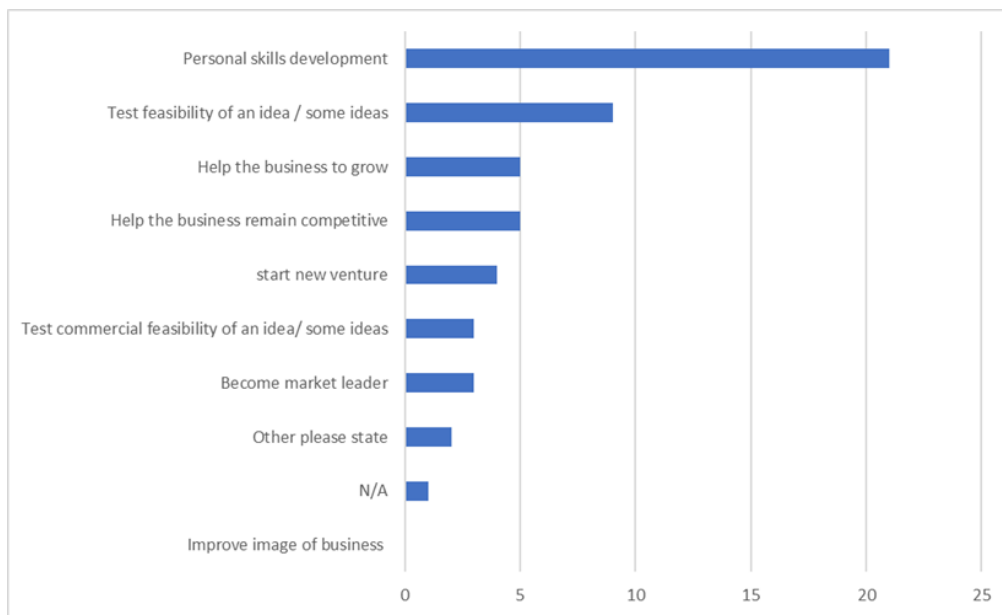


Figure 15: Business objective reasoning for participating in the Hackathon

Which technical objectives apply in the reasoning for participating

In terms of technical opportunities, 70% (16 of 23) chose to engage in the Hackathon to network with others interested in this area. 15 specified that they aimed to develop their skills whilst on the course, which is unsurprising given the aim of the project was to gain new skills in software development without the need for coding. 14 of the 23 participated to experience an alternative innovation environment. This indicates that these participants had not before experienced such an innovation environment, so taking this as an opportunity to engage with a new technology to further their innovation. Therefore, it is unsurprising that many (13) took part to gain access to new technology.

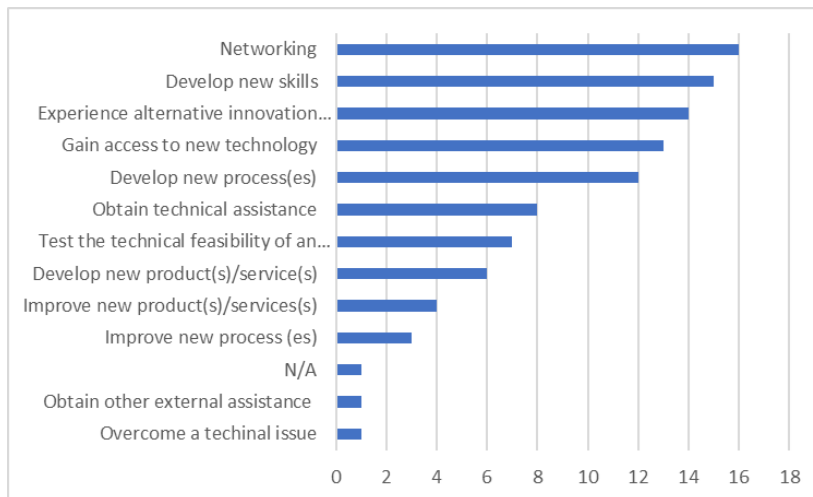


Figure 16: Technical objective reasoning for participating in the Hackathon

Benefits of taking part

- *New software and skills*

When asked what the benefits of taking part had been, most cited learning about No_Code and its applications as the main benefit. They specifically mentioned No_Code apps such as, Twilio Studio, Google Forms and Docs, Zapier and Airtable, as software that they will be taking forward into their business operations in the future. They also stated being given practical experience of using the software was a valuable part of their learning. Some were even able to create practical products on the day that they will now be taking back to their work environment.

- *Networking*

Participants found being able to network and engage with others within the sector was a significant benefit to this event. Not only did it give them the opportunity to meet new people and make new connections, it gave them the opportunity to see how others within the sector would utilise the software to help solve challenges within the sector.

No_Code approach application

Attendees were asked to what extent learning about No_Code approach to app development:

1. Enabled them to see new possibilities in how they might develop applications to:
 - a. **Support existing business activities:** Overall, the majority could see the new possibilities in how No_Code could be used to support existing business activities in some way. 65% of respondents to this question stated that No_Code would help to develop their existing business activities 'a little'. 26% stated it would help 'a lot'. Only two (8.9%) stated it was 'not applicable'. However, none thought that it would not at all help support existing business activities.
 - b. **Improve B2B experiences:** Most will be able to develop applications that at least improve this experience 'a little' in the future. Scores for this were similar to those above, with the majority saying No_Code would enable them to develop a new application to improve B2B experiences 'a little', with 26% stating it would again help 'a lot'.
 - c. **Improve customer experiences:** 65% also stated it would enable them to improve customer experience in the future 'a little'. Few said it would help them to improve

customer experience ‘a lot’ (at 22%). 13% stated N/A to this. However, none of the participants stated it would ‘not at all’ help improve the customer experience.

- d. **Introduce new products and services:** 48% of participants stated that No_Code would enable them to develop applications with the aim of introducing new products and services ‘a lot’. Only 4% stated it would not help at all. 13% stated not applicable. 34% stated it would help ‘a little’. Therefore, in terms of being able to develop new applications to enable new possibilities, most thought No_Code would be most adept at helping develop new products and services.

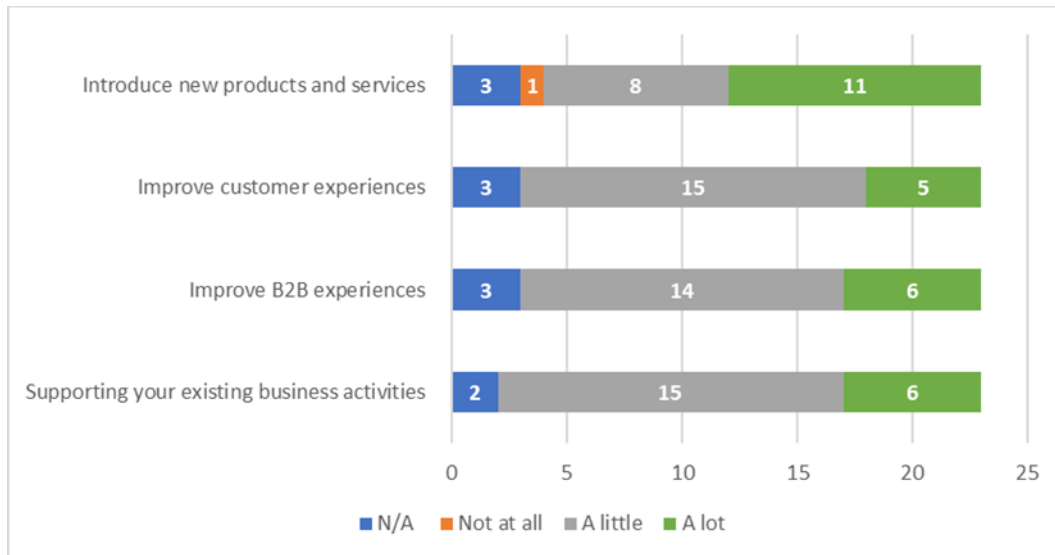


Figure 17: Number of participants which thought No_Code enabled them to see new possibilities by area

2. Made the development of such applications seem more feasible in terms of:

a. **Skills needed**

Most, 43%, stated that the No_Code approach made the development of such applications more feasible in terms of the skills required ‘a lot’. This is likely because the No_Code approach offers the opportunity to develop applications without the extensive coding knowledge that would otherwise be needed. 39% stated it would help them ‘a little’, with 9% saying it wouldn’t help at all.

b. **Cost of development**

The No_Code approach also helped make the feasibility of being able to build the applications much more likely, with 48% stating it would help with expenses ‘a lot’. Again, 39% stated it would help ‘a little’. Only 4% stated it would ‘not at all’ help. Therefore, for most No_Code will make the development of applications in the future much more cost effective.

c. **Reduce Business risk**

30% of the participants stated that the No_Code approach to application development would feasibly help reduce business risk ‘a lot’. 48% stated it would help ‘a little’ with this. 17% stated it would not help reduce risk at all. Generally, though, for most it would reduce risk in some way.

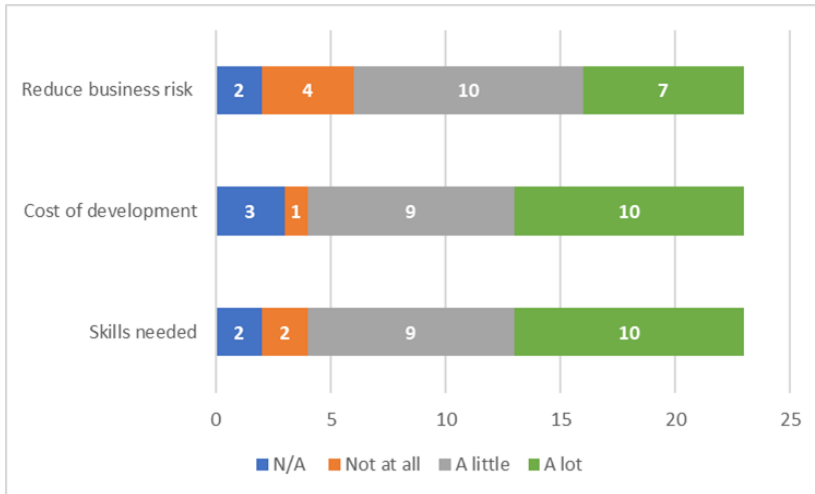


Figure 18: Number of participants which though the No_Code approach would improve feasibility by area

Improvements

The main identified improvement amongst attendees was to have a longer event, which would offer more time to explore the technology in more detail. Potentially, some suggested holding a longer event over a weekend so that it does not clash with work commitments. They also stated that having the event over a longer period would offer a greater opportunity to develop projects fully. Other than these comments, most feedback was largely positive stating that little, if anything, needed to be changed or adapted.

Participation in future events

Overall, when asked whether participants would recommend similar events to others in the future, there was an even split between people being either 'likely' or 'very likely' to recommend a similar event to other colleagues in the future. None of the participants said they would not recommend a similar event in the future to a colleague. This suggests that the bulk of participants found the event useful and would go on to recommend to colleagues in the future.

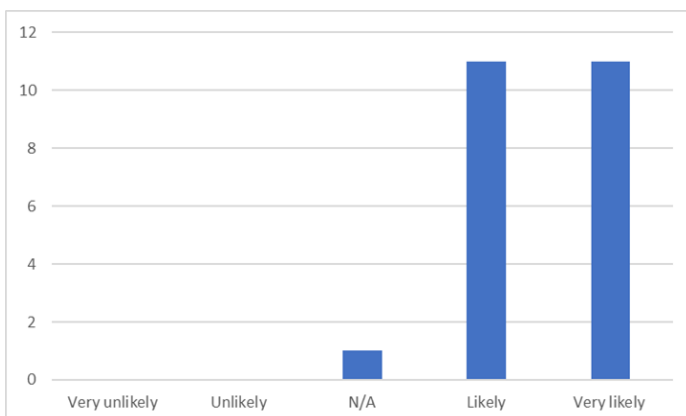


Figure 19: Number of participants which would participate in future events

Interviews

Two attendees agreed to be interviewed about their experiences. Both had been encouraged to attend by their managers after being approached by the No_Code programme manager. They came from a large national legal firm and a property consultancy.

Their motivation for attending the event was that technology was playing a more important part in their work in terms of how they worked with clients and providers. They were based in teams where technology was having more of a potential impact on other parts of their organisations. They were interested in understanding more about LegalTech and PropTech and what products are out there. Both were interested in developing their own apps should the opportunity arise and they had the time to do so. They attended the event with an open mind and expectation to learn by immersing themselves in the tech world for a day.

It was observed that there is a shift in how transactions were being managed in the region which a greater move towards use of technology. A renewed interest in technology because of their roles in their organisations led to attending the SuperTech event. Joining a new team had provided one interviewee with more scope to develop new applications for working with clients on the property consultancy side. His old team had established systems which clients have grown used to and over time they had developed specific expectations around the way of working. This acted as a potential barrier to innovation through the adoption of app-based technologies.

One referred to having some coding experience from university which he has not used much since. The sentiment expressed was that the property sector lacks awareness of technology, is very traditional in its approach and needs to be savvier. This is very much the case in the current team, but the individual was anticipating being able to use what he has learnt in his new team. He is anticipating there will be significant disruption in the industry which stills relies on a lot of manual input.

The hackathon provided a space and co-design as part of a team and demonstrated how things could be done. The No_Code approach was more accessible and provided a 'place to tinker'.

It was observed that those with a coding mindset / programming background were more impressed and those from a more property perspective were less impressed, in that they were more interested in 'give me a tool and what can I do with it' and rather than having the finished product that makes life easier. Those with programming or coding backgrounds were more upstream and were more willing to engage in breaking down challenges into programmable actions.

The three challenges were described as three suggested products. For example:

- One looked at automatic ticketing system for conveyancing a property purchase. This was also referred to as developing a conveyance portal which pulled together several systems. In this challenge they broke down the customer journey, identified actions that needed to be completed and communicated to different parties by text.

The software they used involved:

- Automation / linking systems was achieved with [Zapier](#) such as emails to trigger something else in another application - for example, filing the email.
- [Air Table](#) that looks like an excel table. Can be used to produce dashboard and visuals.
- [Twilio Studio](#) which was described as using graphics to program and produce apps.

One described the process of breaking down challenges as project management and mostly comms.

Benefits identified included:

- Keeping ahead and making the experience better for the customer.
- Developing new systems can be the preserve of the specialist side functions in BPFs businesses who tend to be London-based and events like this allow such functions to come to the regions.
- Scope to mainstream - as do not need to be a hacker or coder to develop applications.
- The biggest benefit was the product, in that there was no difficulty in using No_Code tool to show what technology can do. The practical application of the technology allows exploration of how it might apply back at work.

Both would recommend to others to attend future Hackathons, if only to raise awareness about future possibilities.

It was reported that it was nice to have a balance of developers, tech oriented and property people at the day, but it would have been nice to have more people from the property side (this was an observation made by both interviewees). The group included property managers interested in increasing technical knowledge and property investors bringing a range of experiences. However, it was also observed there could have been more diversity in attendees.

Reflections

This strand of activity was more speculative in nature i.e. both training and Ideas2App had benefited from previous CRF small scale pilots whereas the hackathon was fresh territory for the partners. It was also a comparatively small portion of the use of grant funds (circa 5-10%).

Learnings for Funder

- Similar point to training activities in terms of benefits realisation period and provision for longitudinal monitoring. The hackathon had potential to influence outcomes relating to new services/ product creation and in turn leveraging investments, but the distance between the activity and the outcomes will way extend beyond the project contract period and there is no provision for this.

Learnings for Partners

- This aspect was highly dependent on Covid-19 pandemic restrictions having been relaxed to enable in person delivery. It was not that it was impossible online, but the quality of interaction and the valuable aspects relating to networking seen in the insights would have been severely compromised.
- Partner engagement in setting the challenges was very helpful in so far as making them real and meaningful from the PropTech world. However, having greater access to domain expertise in the room would have increased the quality of participation.
- Recruitment of participants onto the Hackathon needed a more direct and active approach than relying on newsletters and social media. The BPFs sector can be very traditional in outlook and it was necessary to identify individuals who would be receptive to taking part in a Hackathon and were known within sector to be open to new ways of doing business. It was necessary to approach businesses directly and suggest that members of their staff might benefit from taking part.

(4) Overall reflections on the No-Code project

Overall, the project worked well and was delivered in a very ambitious short period. This was only possible because GBSLEP had already begun building the supporting framework to deliver the project, having invested in the development of expertise needed to support BPFs sector within the region that was necessary to design and deliver the project. Without this expertise the project would have been less well designed and executed, and the project would have not been able to draw on the networks and connections needed bring in partners to deliver specific project strands.

There was level of serendipity in the timing of Community Renewal Fund in that SuperTech – a regional sector-led organisation interested in developing FinTech and adoption of technology to support innovation in BPFs sector – which GBSLEP had recently established and supported had reached stage of having sufficient critical mass to deliver the Ideas2App and Hackathon strands of the project. SuperTech is represented on West Midland Virtual Innovation Team (VIT) as a sector organisation interested in innovation in BPFs sector. GBSLEP, through hosting SuperTech, were already developing place-based interventions to support innovation within businesses in the sector to generate enterprise-related outcomes attached to the CRF.

Value for money

Our assessment is that the programme provided value for money. This based on the following observations:

- It has efficiently met its stated objectives and has used CRF monies to help catalyse several important developments in the provision of support for innovative ventures in the BPFs sector. The project either achieved or made good progress against its anticipated outcomes (Table 7) within a very short period. This was made possible by the efforts of GBSLEP and its partners quickly mobilising, identifying synergies with other activities (thereby creating some legacy effects) and finding workarounds for issues that emerged during project set up. There was clear leadership provided by the GBSLEP lead for the BPFs sector.
- The development of curriculum, course material and teaching plans by Million Labs in app development provides an important and useful resource that can be adapted by Colleges and FE providers. This resource can be said to be important legacy of the project.
- A high level of equality, diversity and inclusion was achieved in the recruitment of beneficiaries, in terms of their representativeness of superdiversity of Greater Birmingham.
- The level of potential investment in new ventures in the region that could result from Ideas2App (Super Tech Seeds) strand is high. This not only includes private equity investment but also debt finance to support venture start up (more appropriate for some founders), grant finance from funders such as Innovate UK and public sector procurement where the app being developed addresses specific needs of public sector bodies. The range of business propositions being supported, partly as result of EDI achieved and wider objectives of founders, means a broader range of investment needs to be considered in any future follow-up of participants to assess economic benefits of the project. Even on a crude estimate provided by one of the partners, this strand is likely to leverage additional investment in excess of funding provided by CRF. Their reasoning was average level of investment sought by founders taking part in SuperTech Seeds would be around £100,000 and a success rate of 1 in 4 applications only would be needed.

Table 7: Progress against anticipated outcomes

Short-term benefits (as at the end of the grant period);	Comment
<ul style="list-style-type: none"> New founders created and start-up ventures identified and created (measure = count of participants) 	<p>Fully achieved: Observations of SuperTech Seeds event and feedback through interview administered questionnaires indicate this outcome has been fully achieved. The ideas to app strand of the project recruited 20 high quality ideas that were developed over the programme. SuperTech</p>
<ul style="list-style-type: none"> Upskilling of FE Educators and connectivity with global tech trends and entrepreneurial activity accessible to wider community (Measure = count of trained educators) 	<p>Good progress made. Based on interviews with tutors who helped deliver the training and observation of the training event for FE educators there has been good progress on this outcome.</p>
<ul style="list-style-type: none"> Expanded skills offerings in FE colleges in cutting edge technology relevant to leading employers enabling greater access to higher value jobs (Measure = post grant embedded offer/ new provision in partner colleges) 	<p>Good progress made: the development and piloting of a training curriculum for young people in further education is significant development. It is however too early to assess the value of the skills developed by local employers as students have still to enter the labour market. The development of certificates in response to student request will provide tangible evidence of achievement. Developing a follow-on offer in terms of masterclass or advanced level training based on a student own idea / project would contribute significantly to this intended outcome in s future iteration of the offer.</p>
<ul style="list-style-type: none"> Test and learn approach to explore regionally controlled Adult Education Budget flexibilities to expand delivery for adults (Measure = conclusion on AEB backed sustainability) 	<p>Too early to assess: There is no doubt that the project supported a significant curriculum innovation drawing on private sector expertise provided by Million Labs. There is definitely scope to explore its further development through devolved adult education flexibilities.</p>
<ul style="list-style-type: none"> Piloting of new service ideas in existing businesses to enable service innovation and business model development (Measure = qualitative feedback from hackathon participants and post-completion follow up) 	<p>Fully achieved. Feedback from both SuperTech Seeds (ideas to app strand) and SuperTech Brum PropJam (Hackathon) was very positive and therefore this objective has been achieved.</p>
Long-term benefits (after the grant period)	Comment
<ul style="list-style-type: none"> Engendering a fail fast, learn quick accelerated start-up ecosystem where cost and risk exposure for founders is minimised 	<p>Good progress made. Based on observations of Ideas2App (SuperTech Seeds) and discussions with participants the project is contributing to the development of a model that supports ecosystem in which business propositions are rigorously examined in their early stages of development. We observed specific conversations about regulatory issues and need to provide robust efficacy of an app if it was to be marketed to the public sector that would add to development costs. Similar discussions were observed on likely demand for demand for service being provided by the app. While we did not observe within the cohort the development of the app being pulled early in its development – which is an indication of the quality of the selection process for participants – based on our observations of mentors and advisors at the events there was a much-needed challenge /critical friend function in the discussion of founders’ business ideas.</p>
<ul style="list-style-type: none"> Pipeline of market-tested businesses at early stage that are more investable propositions and able to access the extensive established incubator and more capable of navigated business support ecosystem 	<p>Good progress made Based on our observations and discussions with participants we have found that the selection processes and the support provided has resulted in a cohort of founders who have been able to test their proposition with experts and their peers and have a much better understanding of how to navigate the business support ecosystem. Some founders came to the programme with some experience of using specific intermediaries and applying for grants and were able to share this with their peers. As noted earlier the coordinator of Ideas2App played a valuable role being the first port of call for founders and acted as a navigator for founders who became more assured in the ability to access business support ecosystem.</p>

<ul style="list-style-type: none"> • Visible pipeline and community of No_Code founder/entrepreneur activity attracts more growth capital into the business ecosystem 	<p>Good progress made. As above, but need to follow up founders businesses to assess to what extent they have attracted finance and the extent to which they attribute it to the programme.</p>
<ul style="list-style-type: none"> • Creating a workforce to service future job market as No_Code skills becomes a more established and recognised skill set enabling access to higher value jobs and greater job opportunities 	<p>Too early to assess. There will be lag as students completing the training may not be entering the employment market immediately after completing with some choosing to go onto further study and others being one year into two-year courses.</p>
<ul style="list-style-type: none"> • Businesses have access to a deeper, more entrepreneurially minded labour pool 	<p>Too early to assess: Again, there is time lag due to students will not be immediately entering the labour market. The creation of such a labour pool is dependent on wider training and education provision within the region though the project has equipped students with additional skills and entrepreneurial aspirations.</p>
<ul style="list-style-type: none"> • Enhances the place proposition of the West Midlands on the national/international stage as an innovative place for next-generation services 	<p>Too early to fully assess but No-Code should be written up as a best practice case study. It is our view that No-Code could be put forward as exemplar of good practice to the OECD Committee on SMES and Entrepreneurship (CSMEE). The production of a succinct case study would be useful to supporting learning by both policymakers and could be used as practical example of how CRF has supported placed based approach.</p>

Discussion

Our overall assessment is that the No_Code project has delivered a significant amount of activity within the budget provided by the Community Renewal Fund within a very short time scale. This was possible because how the collaboration that came together to deliver the programme was able to draw upon and develop existing connections and resources within Birmingham and the Black Country.

No_Code is a good example of a local sector led place-based intervention and there is clear evidence of its contribution to the achievement of Community Renewal Fund objectives. We have proposed that it written up as a best practice example that can be used by policymakers and business support intermediaries to develop similar programmes. The funding of No_Code is good example of how the CRF has funded a successful demonstrator project that has the following features:

- No_Code was a genuine innovative response to locally identified and evidenced challenges and needs, including developing foundation skills needed in young people to be able to respond the needs of BPFs sector, and addressing the low level of innovation by the sector within the region and barriers faced by founders wishing to develop innovative new fintech products and services.
- No_Code has contributed to democratising the start-up experience within the region. This has been achieved by GBSLEP convening a collation of partners to help design and implement the programme, the attention to EDI shown in the recruitment of programme participants and the creation of opportunities for peer support and learning amongst participants.
- Addressing potential barriers that the local population face in accessing skills and local labour market opportunities. The No_Code approach to app development has lowered the entry skills level for individuals, enabling them to consider and access opportunities they might not otherwise have considered. While the No_Code approach will not necessarily lead to better employment outcomes for young people, it does equip those interested to consider suitable careers opportunities they might not otherwise be aware existed.
- Contributing to the evidence base for future similar interventions. Each of the three strands generated learning around their implementation and factors affecting their effectiveness for both funders/commissioners and providers of services to support digital innovation at local level in the BPFs sector.
- Providing opportunities for less advantaged young people. The approach to No_Code is designed to be easy to access compared to full coding. This opens doors to people and students who may not be able to grasp specialist coding languages easily to still be able to access opportunities in technology sector. In addition, it provides other people, who may already have jobs or other barriers to learning, with a quicker and easier way to go from an idea to market. The flexible and easy to use methods of No_Code provide greater opportunities than full coding for less advantaged young people.

There was an impressive level of collaboration between the partners delivering No_Code pilot that contributed to meeting the Community Renewal Fund objective of developing a new way of working between UK government and place. Each of the partners was locally based and therefore invested in the success of the pilot, had clearly defined roles and brought specific expertise and resources

associated with what Huxham¹⁰ defines as collaborative advantage¹¹. As a result, the outcomes of the pilots achieved were mutually beneficial for all partners involved including GBSLEP, SuperTech Seeds, Million Labs, Dudley College, Walsall College, and BMET College. The impacts were grounded in the local area. For example, training for young people created mutual benefits for all those involved. Million Labs was able to develop a curriculum for young people which provides potential future users of its platform and accredited developers should young people wish to be on the developer bank from a wider demographic. The colleges they work with now have a curriculum they can adapt for their students and additional offer for their students to increase their employability. Tutors gained new skills as well as students in colleges. Similarly, partners and beneficiaries of Ideas2app strand mutually benefited from taking part in the pilot.

The pilot strongly supports the Community Renewal Fund objective **of levelling up and creating opportunity**. The levelling up missions includes boosting productivity, pay, jobs, and living standards by growing the private sector, especially in places where they are lagging.

The No_Code approach to app development has significant potential improved productivity at the level of individual businesses. In many ways adopting the No_Code approach can be more efficient and responsive to the needs of the business when wishing to digitalise a service or product. It removes the need to employ an individual with expertise in coding thereby potentially allowing existing staff with a good understanding of their company needs to develop and refine their own apps. Similarly, app developers can use No_Code approach to rapidly prototype and test apps with business clients either as fully functioning app to be used by the client or as working prototype for an app that they will develop using a more conventional coding approach, thereby saving programming time and multiple costly iterations.

The piloting of the No-Code approach in different settings has shown that learning how to develop apps can be made easier. Now that the material has been developed for young people, it is possible to provide inset training for interested FE tutors in two sessions as demonstrated by the “Train the Trainer” events. Embedding learning on how to use No_Code in the development of business propositions through the Ideas2App SuperTech Seeds strand means that 24 founder businesses are familiar with the potential of using the No_Code approach to speed up the launch of their business. They can do so much more quickly as they can now develop an app from idea to inception within weeks rather than months. They also benefit from much lower costs in the develop stage than working with a developer to create a fully coded app¹². This contributes to reducing barriers to successful launch of new innovative businesses in BPFs sector and therefore contribute to increase jobs and pay. The impact on less advantaged groups can be significant given how successful Ideas2App in meeting EDI objectives in the first cohort. **This contributes strategic aim of levelling up to boost jobs and grow the private sector.** SuperTech Seeds has developed 24 potentially investment-ready start-up ventures.

Young people from the participating colleges have been equipped with the knowledge of No_Code approach which increases their employability and supports the wider tech innovation ecosystem in the local area. This provides students with a combination of pathways for skills that will be relevant in the future. These include, but are not limited to, developing their own app and starting their own

¹⁰ Huxham, Chris and Vangen, Siv (2005). *Managing to collaborate: the theory and practice of collaborative advantage*. Abingdon, UK: Routledge

¹¹ Collaborative Advantage is a concept that was developed in 1990s to understand why some inter-agency partnerships were more successful than others in providing more joined up public services. It was used to evaluate the effectiveness of the Centre of Expertise initiative in 2000 which aimed to bring together different business support intermediaries to provide specific and specialised business support for specific sectors and challenges faced by businesses.

¹² It has been estimated the cost of developing an app using No_Code can be as little a tenth the cost of employing a coder by Million Labs.

business; gaining skills for higher education and continued upskilling in technology/coding; using No_Code for developing their own Web apps if they are to work freelance; and to bring new ideas into existing businesses to develop and improve existing business practices.

Recommendations

Recommendation 1: Colleges (and potentially other training providers) and local partners should explore how they can fund, continue, and expand the provision of training to young people and digital skills in less advantaged adults who wish to consider career progression and entry into potentially more productive and remunerated roles with BPFs sector in the region. This will require increasing the supply of trained No_Code teachers by running Inset sessions within colleges and schools and providing opportunities to other training providers in the region to offer as part of their offer in upskilling adults.

Recommendation 2: The collaboration created to deliver the pilot should continue receive support given its success in delivering the pilot's intended outcomes. This could include funding for delivering similar accelerator type activity to Ideas2App and adapting the hackathon approach to become more of a demonstration event to raise awareness of the potential of No_Code with existing businesses.

Recommendation 3: There should be continued support for founders to develop their businesses, for young people to deploy the skills they developed, and for college tutors in the integration of the No_Code offer within the College curriculum, albeit with the proviso of providing data to assess the longer-term impacts of the No_Code pilot. This might include creating an alumni group for Ideas2App graduates with the intention of keeping in touch and generating success stories that can be used to encourage other potential founders of innovative BPFs businesses in the region.

Recommendation 4: Colleges use learning from the pilot to adapt and scale provision. This would include: (a) supporting tutors trained in No_Code and providing them with the flexibility to embed / mainstream No_Code teaching into their own subject areas to make it more relevant to their students; (b) limiting group sizes to around 15 so that students can be better supported in their learning; (c) adapting curriculum material so provision can be differentiated by needs, prior attainment and interest of different student groups; and (d) a follow-on course or masterclass for students based around the developing of their app.

Recommendations to Funders

Recommendation 5: Rather than set arbitrary contractual outcome measures around employment and businesses created, agree with projects success criteria that can be used to monitor progress towards achieving these outcomes. This is particularly important for projects that are only funded for less than a year when these outcomes often will only start to materialise some time after beneficiaries enter the project.

Recommendation 6: Consider how the contractual side can be streamlined to reduce both unnecessary burdens and support dialogue between the funder and those delivering projects that support learning and better outcomes and reduces delay. Some aspects of this pilot had time critical pathways which mean extending the project completion date provided little benefit, i.e. provision of training of young people had to be delivered with their College's academic year.

Appendices

Appendix A: No_Code Evaluation Information Note

The study has been commissioned by GBSLEP to support learning and provide evidence on the effectiveness on the No_Code. It was undertaken by [WMREDI](#): a regional [consortium](#) operating from the University of Birmingham.

WMREDI has adopted a developmental evaluation approach for identifying impacts. The purpose of the evaluation is to capture learning and insights that will inform design of similar schemes. To achieve this, WMREDI will be working with colleges delivering the No Code programme to understand the benefits to their students. This will include:

- Focus groups with young people – one per participating college to understand in what ways the training has been helpful; changed aspirations and confidence about future employment prospects; who benefits most from the training and how future training can be made more accessible to other people.
- Interviews with College staff and trainer(s) to understand implementation and benefits so far.

We will also be undertaking interviews with Ideas2App and Hackathon participants including:

- No_Code Entrepreneurs in Residence
- No_Code development team at Million Labs
- Assigned mentors
- Business founders
- Potential customers/investors
- Businesses bringing problem for hackathon
- No_Code developers
- Facilitators

Typically, interviews will last no longer than 45 minutes and Focus Groups no more than an hour. In some cases, these may be recorded and transcribed so that the researchers can fully analyse the context. Information you provide will be held securely by WMREDI and will only be shared with the members of the research team. All information will remain confidential to the research team. We may approach you after the interview for permission to use your company or organisation as case study. The data will be stored on University of Birmingham password protected servers. Although your comments and suggestions may be included in a report, your name and any other identifying information will not be used unless you have given permission. Participants will be offered a summary of their interview or focus group if requested to allow

them to check that the report is accurate and to allow them to make any amendments if they wish. You can withdraw consent for information you provided through interviews or focus groups to the evaluation team for inclusion in the final report up to 30th June 2022.

Students undertaking training were asked to complete a pre and post training questionnaire by their college to allow an assessment of how useful the training has been and how students intend to use their training. Student responses will be anonymised before being shared with the evaluation team.

All research undertaken with trainees will follow their college's policies to safeguard their students. Students will have the option to opt out of focus group meetings. While focus groups will be recorded for quality purposes and to assist with taking notes, the individual views of students will not be reported to avoid the identification of individual students in the final report. Students taking part in focus groups will be asked to keep each other's identities and contributions confidential during and after focus groups to protect the anonymity of their fellow students.

In designing the study, the evaluation team has built in the option to observe hackathons subject to the consent of participants. We will not be video recording the hackathon but instead we will be recording our impressions on how the sessions were run. Participants in hackathons who agree to be interviewed will not be identified in the report unless they wish otherwise. Specific information on the challenges being addressed in the hackathons will only be described in the report in the broadest terms necessary avoiding specific details which may be considered commercially confidential.

If you have any questions about the research at any time, please contact George Bramley (WMREDI) G.Bramley@bham.ac.uk.

Appendix B: College's Questionnaire

1. Why did you decide it was useful for the College to engage students in No_Code training?

Student recruitment

2. How did you go about selecting students for No_Code training? Why did you choose this selection method?

Student engagement

3. Did students engage well with the course content? Which specific content did they find most engaging?

Student benefits

4. What did you hope students will gain from No_Code training?
5. Are there particular groups of students who you think benefited more than others from No_Code training?
6. Are there particular groups of students who you think No_Code training was less appropriate for? Why was this?
7. Do you think this training will help to:
 - a. fill existing skills shortages and gaps, based on your understanding of employers' needs?
 - b. make trainees more employable? And in what ways?

Overall assessment

8. What has gone really well and why? What do you consider the key strengths of the project?
9. *What did not work well and why? (This may not necessarily be a weakness of the project design or your delivery.) What are the key lessons you have learnt from this?*
 - a. In practice, did the No_Code training run as expected? If not, what was different
 - b. ? How does No_Code training fit (or not) with other courses undertaken by students?
 - c. Do you have any suggestions as to how the course could have been improved?
10. *What opportunities have emerged from taking part in the No_Code training pilot for:*
 - d. *Students (e.g. work placements, ideas for own business)?*
 - e. *the College (linkages with professional and business service sector businesses, new offer to future students. Future collaborations with commence / GBSLEP)?*
 - f. *Have you, or when do you plan to take advantage of these opportunities?*

Future

11. Would you like to see this sort of training continue in further education / elsewhere?
12. Would you consider No_Code training for staff in the future?
13. Does the College have the resources and facilities to upscale delivery on No_Code training?
14. Would you recommend No_Code training to other colleagues or partners? Why / why not?

Appendix C: Evaluation of Brum PropJam (No_Code Hackathon)

This questionnaire is to be completed by businesses and entrepreneurs who brought business idea or issue to the Hackathon.

1. How did you become aware of the Hackathon? [tick all that relevant]

- Newsletter
- My business advisor, accountant
- Notification through Twitter, LinkedIn or other social media
- News coverage
- Growth Hub
- Other please state:

2. How useful was the information you received in advance?

not useful at all	not useful	moderately useful	useful	very useful	N/A
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3. What did you hope to gain from participation in Brum PropJam No_Code Hackathon?

4. Which, if any of the themes and/ or challenges, most interested you?

- General PropTech
- No_Code
- Challenge #1 - MAKING DATA MORE APPROACHABLE - Build a project that makes the collection, analysis, and understanding of data around sustainability more approachable.
- Challenge #2 - UNDERSTANDING THE PURCHASING JOURNEY
- Build a project that helps those purchasing property more easily engage with the process.
- Challenge #3 - ENSURING RESPONSIBILITY & ACCOUNTABILITY
- Build a project which supports accountability of property owners and developers.

5. Which of the following general business objectives apply in your reasons for taking part in the No_Code Hackathon? [Tick all those that apply]

- Start up new venture
- Help the business remain competitive
- Become market leader
- Help the business to grow
- Test feasibility of an idea / some ideas
- Test commercial feasibility of an idea / some ideas
- Improve image of the business

- Personal skills development
- Other – please state

6. Which of the following technical objectives apply in your reasons for taking part in the No_Code Hackathon? [Tick all those that apply]

- Overcome a technical issue
- Test the technical feasibility of an idea / some ideas
- Develop new product(s) / service(s)
- Develop new process(es)
- Improve new product(s) / service(s)
- Improve new process(es)
- Gain access to new technology
- Obtain technical assistance
- Obtain other external assistance
- Experience alternative innovation environment
- Networking
- Develop new skills

7. What have been the benefits of from taking part in Brum PropJam (No_Code Hackathon)?

Appendix D: Evaluation of SuperTech Seeds

This question has been developed to collect your experiences of taking part in Super Tech Seeds 2022 as part of an evaluation by undertaken by University of Birmingham.

1. How you became aware of Super Tech Seeds 2022? [tick all that relevant]
 - Newsletter
 - My business advisor, accountant
 - Notification through Twitter, LinkedIn or other social media
 - News coverage
 - Growth Hub
 - Other please state:

2. Please briefly describe the business opportunity / idea that you explored and developed through Super Tech Seeds 2022?

3. Which of the following objectives were behind your reasons for taking part in Super Tech Seeds 2022?

	Main objective	Secondary objective	N/A	Has since become an objective as result of taking part in Super Tech seeds
a) Test technical feasibility of your business idea(s) with a panel of experts				
b) Test commercial feasibility of your business idea(s) with a panel of experts				
c) Develop a viable business proposition				
d) Develop a business plan to support the development of new product(s) / service(s)				
e) Start up a new venture				
f) Be in a better position to exploit / understand potential market opportunities				
g) Help your existing business remain competitive				
h) Become market leader				
i) Help the business to grow				
j) Better understanding of how to manage and protect IP you might develop				
k) Access new technologies / software platform that will allow you to speed up the development and commercialisation of your innovative business idea				

	Main objective	Secondary objective	N/A	Has since become an objective as result of taking part in Super Tech seeds
l) Explore and identify the most appropriate financing for your business idea				
m) Networking and peer support				

4. To what would you say have made progress against your objectives

	N/A	Fully achieved	Made really good progress	Made some progress, know what I need to do next	Made limited progress and unsure what to do next
a) Test technical feasibility of your business idea(s) with a panel of experts					
b) Test commercial feasibility of your business idea(s) with a panel of experts					
c) Develop a viable business proposition					
d) Develop a business plan to support the development of new product(s) / service(s)					
e) Start up new venture					
f) Be in a better position to exploit / understand potential market opportunities					
g) Help your existing business remain competitive					
h) Become market leader					
i) Help the business to grow					
j) Better understanding of how to manage and protect IP you might develop					
k) Access new technologies / software platform that will allow you to speed up the development and commercialisation of your innovative business idea					
l) Explore and identify the most appropriate financing for your business idea					
m) Networking and peer support					

5. What were the main benefits of taking part in Super Tech Seeds 2022?

6. How might Super Tech Seeds be improved in the future?

7. Would you recommend to others to take part? Yes No

Appendix E: Trainer interview schedule

About self

1. Please describe your role as a trainer working with colleges to provide access to No Code training
 - Probe
 - To what extent were you directly delivering training to students, training lecturers to deliver material or both?
2. What attracted you to working with FE Colleges in the pilot programme?
3. Which colleges did you work with? How did they differ in their approach and did their approach affect how you were able to deliver training?

Perceived benefits

4. What do you see being the main benefits of the piloting No_Code training with colleges?
5. To what extent do you think the training addresses a skills gap?
 - Probe
 - What they consider to be the gap
 - How the gap is addressed
6. What do you hope students will gain from it?
7. Are there particular groups of students who you think benefited more than others from No_Code training?
8. Are there particular groups of students who you think No_Code training was less appropriate for? Why was this?

Student engagement

9. Did students engage well with the course content?
10. Which specific content did they find most engaging?
11. Were there any barriers or issues around engaging student and or supporting their learning?
12. If yes, what strategies did you need to use?

13. What was the typical class size? How did this effect delivery?

Lesson learnt

14. In practice, did the No_Code training run as expected?

15. What worked really well?

16. What did not work well?

17. Do you have any suggestions for a similar training programme based on your experiences of delivering No_Code?

Going forward

18. Would you like to see this sort of training continue in further education?

19. Does the College have the resources and facilities to upscale delivery on No_Code training?

Appendix F: Student Focus Group

Meeting to share your views on No_Code training

Your meeting facilitators today are

- Today's meeting is about your views on the training you received and how it has made a difference.
- We will be taking notes of today's meeting.
- Individual views will not be reported in the final report to avoid the identification.
- Please keep each other's identities and contributions confidential during and after meeting to protect the anonymity of your fellow students.
- Please respect the views of your fellow students – there are no wrong answers just different ones.

Taking part

- How did you join No_Code training?
- How did the college encourage you to take part in No_Code training?

Expectations and experience

- What did you expect?
- Did it meet your expectations?
- What did you enjoy most? Why?
- What could be improved?

Benefits

- What skills you have developed?
- How might No_Code training help you find work?
- Has No_Code increased your confidence?

Future career possibilities

- What jobs do you can now go for?
- Would you consider.:
 - app development?
 - Setting up your own business?
 - working in FinTech

Future

- Who would you recommend to other students and why?
- How might the course be made better?

Finally

- Anything else you like to say or ask?

Appendix G: Challenges and issues encountered in implementation of No Code boot camps and training

Issue	Description
<i>Technical</i>	<p>Logging in, students forgetting passwords between sessions and other technical issues ate into learning time and created a learning barrier for a sizable proportion of students.</p> <p>Choice of software platform for remote delivery, Teams was not the best platform as it does not support two screens like Zoom which would have allowed the trainer to better monitor the class. Teams was requested by the colleges, so this was difficult to resolve.</p>
<i>Communication and clarity of project aims</i>	<p>Misperceptions and lack of communications around what course would involve at the beginning. This resulted from the short notice that the course would be delivered. Tutors and students thought using Bubble would be easier than coding. They still had to learn how to program it, which included learning a specific set of steps and procedures that were not easy to easy to remember between lessons. While very logical, the sequencing of programming steps that was required was not intuitive.</p> <p>Communication was also very varied across the institutions. GBSLEP involved all of the partners throughout bidding stages and in the mobilisation period, but how such messages flowed within institutions was highly varied and was very difficult to influence to respond to such feedback during the programme. As a partnership, mitigation measures included Million Labs allowing time after each session to discuss group needs, individuals in need of greater support and plans for the next session to progress learning.</p>

Issue	Description
<i>Coverage of capabilities of Bubble</i>	<p>The training only covered part of the functionality of Bubble and excluded some of the functions some students were most interested in. This is a function of it being an entry level course as a taster of what is a very sophisticated platform. That learners wanted to see more is a positive in some ways.</p> <p>Some students found it engaging and often completed the work quickly, whilst others struggled using the software which they did not find intuitive to use. Bubble required developing an understanding of the process of building an app which required following a set of processes, stages, and defined tasks to produce an app. Some of the students stated that it was difficult to use and understand the software without some knowledge of coding [or basic programming syntax]</p>
<i>Preparedness of tutors</i>	<p>Tutors reported that they needed printed material to refer to during delivery of training and that a they would have preferred full set of materials well in advance to feel better prepared for co-teaching training sessions. would have been helpful.</p>
<i>Large groups</i>	<p>Smaller groups would have helped with preventing some students from falling behind. Class size needs to be kept to around 16 as larger groups did not work so well. One Digital Skills tutor noted that they usually had eight students in their class as, particularly for students with low skills, tutors needed to be on hand to provide guidance. Some students struggled because they did not have the right level of support and did not have sufficient time, which is a potential issue for future roll out of similar training.</p>

Issue	Description
<i>Timetabling</i>	<p>Time, timing, and timetabling were the biggest issues. Lack of lead time for timetabling was an issue and was a direct consequence of both the delayed award announcement. Specifically, the original Government award timetable was for announcements in August, which would have preceded the commencement of a new academic year. Whereas the November announcement was far into the Winter term and contracts being received during the festive period constrained partners considerably.</p> <p>As a result, timetabling was an issue and how college worked around it resulted in some more difficult teaching situations. BMET attempted to deliver the training simultaneously with the support of tutors to 80 students in four classes when ideally training would be provided to single group of around 15 to 16 students. Sessions lasting 90 minutes were less than ideal when delivering remotely. In future it was felt that there might be better engagement in coding after No_Code training if this was embedded in the curriculum.</p> <p>Those students that fall behind could struggle to catch up because of time constraints. Timetabling meant some groups of students were selected based on trainer availability. In other colleges, the delays in starting meant that fewer students were able to take up the training due to timetabling clashes. This was especially an issue for second year students who were approaching the end of their studies.</p> <p>There were insufficient opportunities for students to practice and reinforce learning between training sessions. A week's gap between session can be too long for most students and two sessions per week may have helped consolidate learning.</p>
<i>Pace</i>	<p>Pacing of material developed. It was thought that the pace sometimes was too fast for some of the students. This was not necessarily the fault of the facilitator.</p>

Appendix H: List of ideas supported by Ideas2App

	Founders	Incorporated	Seed Enterprise Investment Scheme Complaint	FinTech	PropTech	EdTech	Corporate Responsibility	ProfTech
1. KRED24 app is being developed by KRED, an established data-driven financial services provider for immigrant communities in the UK including international students and skilled workers. KRED use technologies to help solve the issues faced by millions of immigrants who are underbanked, unbanked and have no credit history.	1	●	●	●				
2. Q-PIP aims to revolutionise the provision and management of building risk information. Delivered via an online platform, Q-PIP manages and distributes building risk data to ensure legal requirements for compliance and a fire safety audit perspective. Q-PIP also ensures that building risk information is instantly delivered to operational crews in attendance to incidents, on-site, in real time.	1	●	●		●			
3. Meliora is a PropTech platform focused on overseas real estate deals and construction projects targeted at over 50s. Meliora aims to break the barriers that UK citizens face when buying property in Croatia and Northern Italy, providing analytic insights to help them solve their challenges and make the most informed decisions.	2	●	●		●			
4. Astro Chain is a Web3 integrated mobile app that works with established sky scanning tracking devices. The Astro Chain app provides eyes on the sky to capture anomalies and meteors across the globe to help identify and make them publicly available. The Astro Chain app allows those who cannot travel to capture their own unique videos of activity such as the breath-taking Aurora Borealis or meteor showers, all while bridging the gap between space and NFTs by using the Blockchain to prove ownership of the captured video and data.	1	●				●		
5. YOUR ASSET PAL (YAP) is a digital online asset depository for children from birth to 18 years old. An all-in-one management platform that supports parents with:1) A child's digital financial assets, including cryptocurrency savings (plus access cap at age 18, pocket money, NFTs, inheritance) through an attachment to a parent's digital ledger2) To capture a child's academic and milestone achievements across their entire academic lifespan, including nursery, primary	1	●		●		●		

	Founders	Incorporated	Seed Enterprise Investment Scheme Complaint	FinTech	PropTech	EdTech	Corporate Responsibility	ProFTech
and secondary years, and provide them with a digital record of achievement when they turn 16, and 3) An educational resource to support children, families, and organisations with safe transitioning into the upcoming digital era.								
6. Bloomwise Workplace Mental Health app that will allow employers and employees to track key metric data, including mood, stress, and workplace engagement, on both an organisational and individual level. Bloomwise is a mental health consultancy business that helps employers create a healthier, happier, and more productive workforce through educating and empowering businesses to turn mental health from an obstacle into an opportunity to flourish.	2	●					●	
7. Our Tied Camel is a digital workspace for Muslims, where users can track and prioritise their daily prayers while managing their time and tasks in one customisable space. It integrates with any professional services calendar to allow better productivity and ease of daily scheduling by colleagues. A tool to support the diversity and inclusion strategy of the modern business world.	2	●					●	
8. Collective Fitness is an on-demand, personalised, all-in-one health and wellbeing support platform for employees. Designed for large organisations looking for a digital solution to reduce employee absenteeism, Collective Fitness brings an entire better health solution to employees. Designed for hybrid working for today's corporate world, Collective Fitness provides 1-1 coaching sessions, 24/7 coach access, health and nutrition education, and weekly check-ins.	1	●	●				●	
9. Maze services create a seamless transition for anyone moving from their home country to settle in the UK. A relocating user can organise and plan their move with access to services and personalised support from orientation, home search, banking, registrations, utility setup, and integrating into a community. Our website www.trymaze.com features service packages suited to various relocation needs, resources and free tools to help relocators save on cost, time and stress.	3	●					●	
10. AskOpus is a leadership app that aids talent retention and solves common leadership issues. Through inspiring stories, reflective coaching questions and an interactive game called 'Can you lead a horse?' users learn how to change their behaviour to influence others more positively.	1	●					●	
11. Entrusthub is an ecommerce marketplace that connects business leaders to innovative professional services firms. Our technology is the little black book of contacts users wish they	1	●	●					●

	Founders	Incorporated	Seed Enterprise Investment Scheme Complaint	FinTech	PropTech	EdTech	Corporate Responsibility	ProfTech
knew already to help solve their work-related challenges. Use Entrusthub.com to search for relevant providers, contact companies directly and review services to provide feedback for future users.								
12. Willit is a web app designed to help users troubleshoot legal issues at a simple and understandable level and then source the relevant professional legal help. Iteration 1 helps consumers troubleshoot issues relating to wills and probate to source West Midlands-based legal service providers.	1	●						●
13. Breach Reporter provides a single portal to manage supplier and customer contracts, identify the relevant clauses and communicate with those seamlessly in the advent of a breach. The technology enables organisations to quickly report suspected or actual data breaches to their suppliers and customers.	1	●	●					●
14. LIFE-SAI is being developed by a medical device focussed company intending to disrupt the medical device regulatory industry through software innovation.	1	●	●					●
15. The Hook Up is where real relationships are forged based on the adage of the gift of time. Stoked by the desire to do business with other businesses, The Hook Up offers a digital place to meet for the first time with other businesses looking to develop new relationships and promote, support and advise others. SMEs can find the partners they've been waiting for. Where that true match is waiting for you, age and location aside, The Hook Up makes new introductions quicker, slicker, and there when you need them most. When your next relationships mean business, The Hook Up is there as your wing mate.	2	●	●					●
16. FuneralPlanner is a platform to bring the funeral industry into 2022. As one of the oldest industries in the world, the funeral profession has lagged in digitisation and innovation. FuneralPlanner combines simple, easy-to-use software with over 50 years of funeral industry experience, leaving more time for funeral directors to focus on delivering the best possible services for the families they serve.	1							●
17. AIXIA is a venture focused on understanding the carbon impact of everyday travel. 45% of a personal carbon footprint can be attributed to mobility choices. Yet, most people do not clearly understand their carbon footprint or how they can offset their carbon impact. The Aixia app	1	●						●

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tracks carbon emissions caused by transportation. It rewards clean mobility and allows customers to offset their transport-based carbon footprint. Aixia will make every journey count in the fight against climate change and change personal behaviours								
18. POCKET SIZE PR aims to be the new go-to platform to help small business and charities power up their PR. The affordable subscription-based website gives users access to on-demand webinars, tips, templates, and how-to guides crafted by a team of PR experts. It offers enhanced PR learning to students in education, in addition to connecting education providers with a directory of experts who are on hand for guest lecturing and inspiring talks.	2							●
19. Ethco is helping ethnic and independent convenience stores go digital using low-touch technology. We are assisting stores in solving their biggest problem by integrating with their suppliers and automating reordering, saving them many hours they can now spend with their families. We are connecting customers from ethnic communities who cannot order their ethnic groceries online to their stores and providing them with a 2-hour delivery from their favourite store.	1	●						●
20. BLEEPUS is aimed at Private & public healthcare, nursing and care home sectors providers and designed to help with staffing of shifts by providing a smart fulfilment solution for absenteeism, off-sick, and shift cancellations.	1	●						●

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