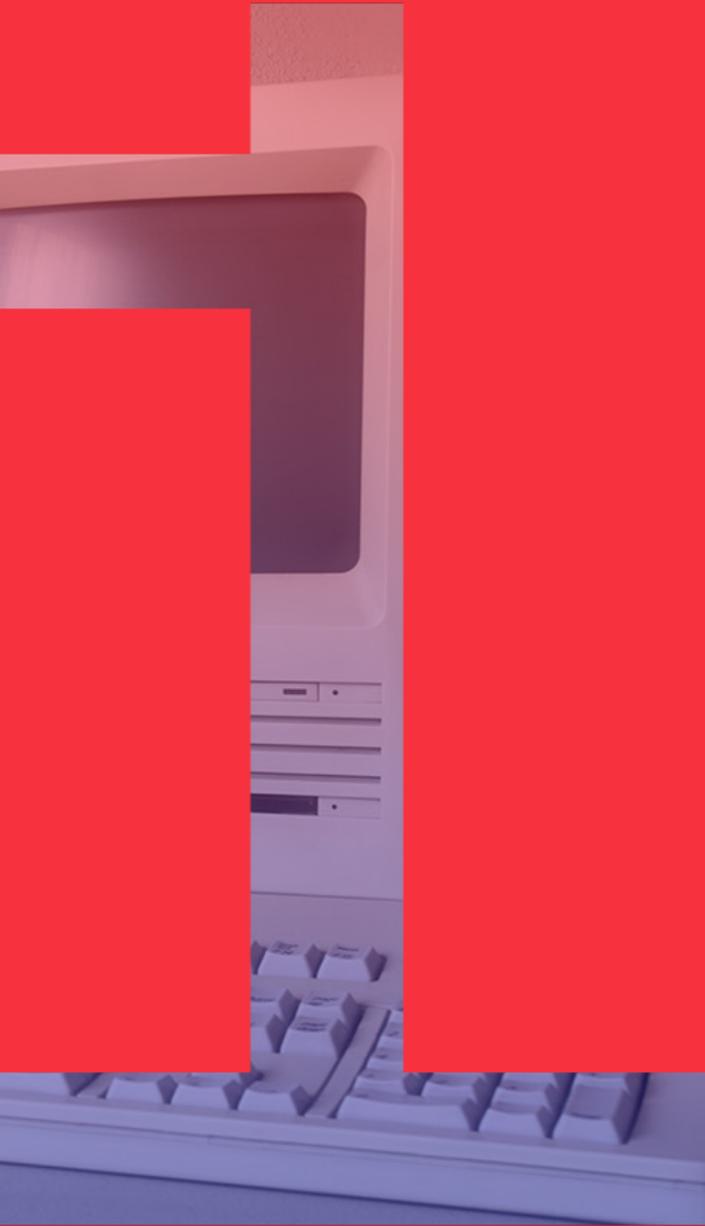




**DIGITAL
SCHOOLHOUSE**
together with



Next Gen Report Anniversary 10 Years: Reflections



PlayStation.



About

We are now challenging students and really letting them understand their digital world.

Bruce, Subject Leader for Computing



The Next Gen Report (Ian Livingstone and Alex Hope, 2011) was published 10 years ago. It's purpose, to review the skills needs of the UK's video games and visual effects industries and to make practical recommendations for how these needs should be met.

The Next Gen Report was the catalyst for changes across the industry, including the birth of Ukie's very own Digital Schoolhouse (DSH) programme.

Ukie's education initiatives are a direct consequence and result of the report which recognises grassroots action for a stronger talent pipeline.

Since its inception, DSH has worked hard to realise it's vision of revolutionising computing education to future proof our industry's workforce. To date, it has reached over 111,000 students and 10,000 teachers across the UK through play-based Computing workshops.

To celebrate Next Gen Report's 10-year anniversary, DSH's Lead Teacher network has reflected on the changes that they have experienced over the last decade, how those changes have impacted their teaching and what still needs to be done.

[READ NEXT GEN REPORT](#)



Shahneila Saeed

Director, Digital Schoolhouse
Head of Education, Ukie



We have learnt and accomplished so much over the past 10 years. It has been an exciting journey, and I'm just as excited about the future.

10 years ago the Next Gen Skills report was released. 10 years ago, I was still teaching in the classroom, busy trying to convince my senior leadership team that the ICT curriculum we were teaching our students bore no relevance to their lives today and tomorrow. It had little impact and wasn't providing them with the skills they needed in a growing technological society. It was the reason why our GCSE numbers were declining. So, when the Next Gen Skills report was released, I was quite literally dancing for joy. Here was an official report from professionals in the industry, a report that government and headteachers would listen to. It was saying all those things that I had already identified as issues in the classroom. The Next Gen skills report triggered a transformational change so huge that it was the biggest shakeup faced in the history of computing education in this country.

As a result of growing pressure from educators and industry professionals alike, the UK government announced the disbanding of the legacy ICT curriculum and announced a new computing curriculum. This was incredible news, brilliant even, and exactly what we needed; however, it wasn't without its challenges. We were set to introduce computer science concepts for the first time to five-year-olds and upwards. As a country, did our teachers have the expertise and confidence they needed to deliver it? The answer is no. Over two thirds of teachers did not have the skillset needed to teach the subject, or the confidence (and in some cases motivation) to do so. The challenge we'd set ourselves was indeed aspirational, and not an easy one to achieve. But we had high hopes, and a goal to bring high quality computing education equally to all students. Then began a decade long effort to upskill and inspire a nation of teachers.

This wasn't just about knowledge and skills; this was also about confidence and motivation. About ensuring teachers understood the importance of what was happening and allowing them the time and resources to enable them to get on board. This was also about the confidence and motivation of our students. Helping them to see the relevance of the subject in their everyday lives; to be inspired by it, to see a place and role for it in their future.

It's 10 years later and are we there? Have we achieved our goals? Are we a nation that provides equal access to high quality and world leading computing education for all our students? Possibly not. At least, not yet. When you look at the number of entrants to computing GCSE and related courses, or the uneven quality and range of devices that students get to use, unequal access to extra-curricular and careers related opportunities or simply the range in quality of in-class provision; then we have not yet achieved our goal.

We have come a long way since; and we are certainly on the right path. The DfE spent £80m funding the creation of the National Centre for Computing Education which has sought to upskill thousands of teachers across the country. Likewise, industry has also played its part. Through the funding of scholarships, creation of new apprenticeship standards, the programmes such as Digital Schoolhouse, a greater breadth of enrichment opportunities and a new openness to engage with educators. There has never been so much resource available to help upskill, inspire and motivate a nation of teachers and students.

Together we've helped shift the tide in people's perceptions of computing and careers within the video games industry, raised students' confidence and career aspirations. Over the past 10 years we have achieved more than we imagined possible.

Is there more to do? Definitely! But that's okay. We have learnt and accomplished so much over the past 10 years. It has been an exciting journey, and I'm just as excited about the future.



9 YEARS TEACHING

Amber Keats

Skills City Education and Employment Manager
IN4.0 Group/ HOST/ Skills City

There needs to be more focus on fair access and access to the learning students want.

YOUR GOLDEN MOMENT

My golden computing moment came in Muscat, Oman when I realised that I had inspired most of a year group to take Computer Science at GCSE. Previously, there had only ever been 3 or 4 [students] taking it [GCSE Computing] with the majority opting for basic ICT GCSE's. With the year groups I had taught, we saw this double in my first year and triple in my second year as they became inspired, and as they were gaining in confidence from having sprinklings of computer science in their curriculum from Year 7 up.

YOUR REFLECTIONS

MOST NOTABLE CHANGES
LAST 10 YEARS

The most notable changes I have seen in the last 10 years revolve around more of a focus on Computer Science and programming/coding. However, this hasn't necessarily been executed correctly considering the skills and time that the teachers have to implement these changes, or considering the students actual interests.

MOST IMPACT
ON YOUR TEACHING

The amount of additional paperwork and admin needed for teachers to show they can do their job has increased to the point where it drove me from teaching in secondary schools. There was less emphasis on the teaching and getting students to enjoy their learning.

WHAT STILL NEEDS
TO BE DONE?

There needs to be more focus on fair access and access to the learning students want. Less on what looks good/ the government believe is needed.



YOUR WISH

In the next decade, I would like to see more of an equal split of female and male students and more representation in games and tech in general that works for everyone using it.



Andrew Csizmadia

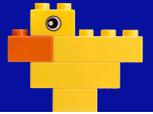
Head of Computing
Newman University

Work has not been done in isolation but supported by organisations such as Computing at School, Digital Schoolhouse and the NCCE.

YOUR GOLDEN MOMENT

My golden moment was the discovery of the Lego Duck, six Lego bricks, for teaching, exploring and explaining algorithmic thinking in a creative way. This unplugged activity allows computing learners to physically build with six Lego bricks their own artistic interpretation of a duck, and then communicate clearly and concisely their design to another learner to see if they can duplicate the original duck. For me this activity summarises what computer science is about and that is creative problem solving.

YOUR REFLECTIONS



MOST NOTABLE CHANGES

LAST 10 YEARS

With the restoration of computer science as a subject in compulsory computing education, I have had the opportunity and privilege to work with trainee and existing computing teachers helping them rediscover historical roots, engage with and embed computing pedagogies in their teaching and introduce them to tools and techniques for teaching computing.

MOST IMPACT

ON YOUR TEACHING

Having been educated in the first computing education wave in the UK where I learnt to program computer games including a lunar lander in BASIC on a teletypewriter and saving programs to paper tape, I am reminded of the need to teach students to fully understand a problem, break it down into smaller subproblems, successfully create coding solutions and above all, persist.

At the kernel of computing education is the individual learner and the challenge of all computing educators, including myself, is how do we passionately communicate the beauty and joy of computing. Thus, inspiring an individual learner not only to be a consumer of digital technologies, but appreciate and are aware of not only the advantages but the limitations of computing for themselves, their community and society as a whole.

YOUR WISH



I wish that over the next decade, computing becomes the fourth basic skill taught in all schools, alongside reading, writing and arithmetic. This is in order that all learners can appreciate the digital technologies they engage with not only in school, but their leisure activities and future employment.



Bruce Ahern

Subject Leader For Computing

John f Kennedy Catholic School

Computing is a much harder subject to teach than ICT but more rewarding.

YOUR GOLDEN MOMENT

Four years ago, I organised a “Leading Arcade Day” for Year 8 & 9 PP students. On the day they worked in groups, building a full-sized arcade machine and programming an arcade game using Pygame on Raspberry Pi. We had a couple of external speakers one from Microsoft and one from Playground Games. It was a day the students really enjoyed and still talked about two years later.

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

Computing is a much harder subject to teach than ICT but more rewarding. I feel we are now challenging students and really letting them understand their digital world.

MOST IMPACT

ON YOUR TEACHING

The negative is it [Computing] is hard work. The collaboration that was around at the start of the move to computing has dissolved quite a bit leaving departments increasingly working on their own.

WHAT STILL NEEDS TO BE DONE?

Time is the biggest drawback as new technologies come, it is hard to get the resources together to really teach them.



YOUR WISH



That we move away from paper-based algorithm papers at A level so students are really programming in the exam.



7 YEARS TEACHING

Claire Gyspreedt

Subject Lead Computer Science
Wrenn School

[I wish] esports to be recognised on the league tables.

YOUR GOLDEN MOMENT

Seeing more girls taking up Computer Science at GCSE and A level in my school.



YOUR REFLECTIONS

MOST NOTABLE CHANGES LAST 10 YEARS

Computing for me has changed in the last 10 years from building a computer, knowing how a computer ticks, to how to protect and nurture that network or computer system.

MOST IMPACT ON YOUR TEACHING

We are evolving into how a computer system can help us beat cyber crime, cyber war and the inner technical knowledge needed to fool, educate and support people in society.

WHAT STILL NEEDS TO BE DONE?

Computing is becoming a core subject, whether it is a technology you work with or work alongside in the near future, you will need to know the foundations to then excel your career.



YOUR WISH



Esports to be recognised on the league tables and for the league tables to recognise Computer Science's extra avenues as academic too. It provides real world experience to young students.



Clare Doherty

Head of Technology & Design
St. Mary's College, Derry

I hope that the exam system and curriculum catches up with advances in ICT.

YOUR GOLDEN MOMENT

My golden computing moment was when the first Laser Cutter and other Computer Aided Manufacturing equipment arrived in our department, and we were able to transfer the students Computer Aided Design work so easily to 3D objects. This revolutionised the quality of products that we were able to produce in house and, the speed with which they could be manufactured.

YOUR REFLECTIONS

MOST NOTABLE CHANGES LAST 10 YEARS

Over the last 10 years the world and schools in particular keep evolving and recreating. To think that schools switched overnight to online would have been inconceivable ten years ago but that is what we were able to achieve in 2019!

MOST IMPACT ON YOUR TEACHING

Students today have much more access to the internet and devices which has allowed their confidence to improve and the way in which they access content has changed. They are often with or at times in front of the teacher when it comes to new technology and this has changed the dynamic in the classroom. I cannot image my teaching today without the advantages!

WHAT STILL NEEDS TO BE DONE?

Currently I feel that society needs to address the digital poverty experienced by some students as well as introducing more ICT literacy in primary schools. One of the things I would like to see is the end of heavy school bags with all students having access to interactive information on a small tablet. It is an exciting time to see the advances in ICT inside the classroom!

YOUR WISH

In the next decade I hope that the exam system and curriculum catches up with advances in ICT and equips all students with the skills they need for the workplace.



26 YEARS TEACHING

Dr Irene Bell

Head of STEM

Stranmillis University College

Digital Schoolhouse has made a major impact to the development of computational thinking and computing in the primary schools in Northern Ireland.

YOUR GOLDEN MOMENT

As the Regional Academic Lead for Digital Schoolhouse (DSH) in Northern Ireland I will never forget sitting at the back of a Year 5 classroom observing a DSH lesson based on literacy and emotional well-being. The DSH Lead Teachers had made physical resources which the children were using to display happy/sad etc. and having completed this then related it directly to the 'if – then' statement in computing. The Year 5 class teacher whispered to me 'I can't believe my class are responding so amazingly to this lesson'. She identified a particular child and indicated that the vocabulary he was using was way above his normal literacy level. Computing had opened a new door for this child's literacy.

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

Co-teaching is considered one of the most successful formats for professional development. Teachers understand teachers. That's one of the major advantages of the DSH programme being delivered Lead teacher to primary teacher and the reason it has been an outstanding success in Northern Ireland.

MOST IMPACT

ON YOUR TEACHING

Over a 3-year period DSH have made a major impact to the development of computational thinking and computing in the primary schools in NI. The esports programme has allowed pupils from our Lead Schools a unique opportunity to engage in a career opportunity which otherwise they probably wouldn't have considered.

It's not surprising that 2 of our Lead Teachers have won BCS(NI) awards for their work in computing in NI.



YOUR WISH



My wish is that teachers in all schools in NI could have the opportunity to experience the Digital Schoolhouse programme.



15 YEARS TEACHING

James Jackson

Director of Digital Transformation
Shaw Education Trust

There there is now a greater focus on technology careers, and I've seen lots of students... finding that computing has a place for them.

YOUR GOLDEN MOMENT

Winning the National Cyber Security competition with a group of students who had been continually told they were unteachable and unable to make anything of themselves. This was the first group I ever taught as college tutor.

YOUR REFLECTIONS

MOST NOTABLE CHANGES >
LAST 10 YEARS

There has been a notable shift away from 'office' packages to more direct computing in my lifetime of teaching, which is great for the industry and the developing elements of careers,

MOST IMPACT >
ON YOUR TEACHING

The downside is that with it there has been a loss of the 'creative' side of computing, design and interaction, UX and UI, coding is only one element. On the whole however there is now a greater focus on technology careers, and I've seen lots of students who would have normally gone into other areas finding that computing has a place for them.

This is certainly more true for neuro-diverse students who I've seen growing numbers of in the field, and this has been amazing in promoting the inclusivity and openness of IT and computing.



YOUR WISH

That there will be a return to technical computing, actually doing things, rather than just writing academically about them.



20 YEARS TEACHING

Jane Adamson

Director
Knetic Education

With focused CPD, teachers are keen to try things out and become fearless explorers.

YOUR GOLDEN MOMENT

One golden moment that has stood out for me was when I was in a previous role teaching at the City Learning Centres which were test beds for innovation for technology in education. One particular class was building Lego robots and learning about inputs and outputs. The pupils were all working collaboratively in small groups and each of them had an assigned role. The class teacher commented that they were amazed by some of the pupils. They had never seen the pupils so engaged in an activity and working as collaboratively as they were within the group. This made me think that all pupils want to learn if they are given a challenge that motivates them. It is all about flicking that light bulb inside their head onto learning is fun. Playful computing is a great way of doing this as well as then encouraging a lifelong interest in learning.

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

In my work as an education consultant for a number of schools, I have noticed that staff can seem reticent to teach computing and this has increased with the switch in focus to coding.

MOST IMPACT

ON YOUR TEACHING

With focused CPD, teachers are keen to try things out and become fearless explorers. Often introducing the idea of unplugged activities, decoding code and tinkering, gives the teachers the confidence to teach computing.

Teachers all want to do the best for their learners so if they are given the right tools and skills, they will succeed.



YOUR WISH



In the next ten years I would like to see a rise in the profile of Computing as a subject, as well promoting the opportunities to integrate it into other subjects.



TINDERBOX

5 YEARS TEACHING

Luci Holland

Programme Manager

Tinderbox Collective | Youth arts & music Scottish charity

There is even more of a willingness from educational institutions to explore alternative teaching methods.

YOUR GOLDEN MOMENT

Developing digital game levels with students at a residential school, inspired by their imagination and creativity, and seeing their sense of pride as the game came together.

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

As a freelance youth worker in community arts, I believe there is even more of a willingness from educational institutions to explore alternative teaching methods and digital subjects & tools like those found in game design.

MOST IMPACT

ON YOUR TEACHING

Over the years I have personally worked with numerous organisations and schools on alternative arts projects that have recognised games and tech as complimentary routes for young people in STEM and computer science.

At Tinderbox we have more recently over the past year been running online games workshops & clubs that have also showcased the importance of collaboration, playfulness, and subject cross-over for development and community building, and how games are a perfect medium for this.



YOUR WISH



I would love to see continued experiential & community opportunities for young people, as well as further career development and support for those looking to pursue games design or related areas after leaving school education.



9 YEARS TEACHING

Martin Sexton

Faculty lead for Business, Health and Computing
Mildenhall College Academy

I don't think enough is being done to address the shortage of computing teachers.

YOUR GOLDEN MOMENT

The launch of the NCCE. The offering from it has been incredible to support teachers with all levels of subject knowledge. The courses are high quality, the SME support can be invaluable and the lesson resources save so much time!

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

When I was training, computing education didn't seem to be important. The government didn't seem to be able to make up its mind about whether it was needed or not. For a time, I wondered whether there would be a job once I finished my training. Since then, lots has been done to try to ensure that every student gets a good education in computing.

MOST IMPACT

ON YOUR TEACHING

CAS always seems to be there to support teachers and the community meetings helped me lots at the beginning of my career to develop better ways to teach computing. CAS has been a huge driving force in making sure that the government values computing education and the changes over the last few years with the NCCE have really helped to put computing in the spotlight.

WHAT STILL NEEDS TO BE DONE?

There is still a long way to go, I don't think enough is being done to address the shortage of computing teachers. Recruiting from other subjects can only go so far. In our area, there does not seem to be enough training providers training computing teachers. Every training provider should be training computing teachers.

YOUR WISH



Over the next decade I would like to see computing being seen as the important subject it is. Every one of our students will end up using technology of some kind in their future so it is vital that they understand how to use it correctly and how it works. Not necessarily to become excellent programmers but so they understand the reasons technology behaves in the way it does. Too many schools seem to think computing education is optional, especially at KS4. This needs to change. Senior leadership teams across the country need to value it and ensure it is one of their priorities for time and resources.



Ravinder Singh

Faculty Director - Computing and Enterprise
Ark Victoria Academy

The linear assessment model may strengthen the academic aspect of Computer Science teaching but it fundamentally de-skills the students.

YOUR GOLDEN MOMENT

The most satisfying moment as a teacher comes when you've demonstrably made a difference to a student's life and career path. I'd taught several students the basics of practical computing at an afterschool club; they were ultimately taught to assemble their own PCs and learnt additional skills such as programming from there. Some of them liked the experience so much they went on to successfully work as IT technicians or enrol on Computer Networking degrees at University.

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

There have been positive changes within the teaching of Computer Science. The move beyond teaching IT skills based largely on Microsoft products (Word, Excel etc.) has been encouraging. Whilst those skills are still necessary, the underlying ideas of teaching them were founded in the 1990s when the use of computers was still relatively new. There are significant negatives, however.

MOST IMPACT

ON YOUR TEACHING

The current syllabus treats programming as an overly academic subject. The move away from coursework forming part of the assessment criteria for students has degraded the skills students develop when they learn by doing. The linear exam model has meant that students may develop a good academic understanding of how a computer works but lack the practical assessed experience that allows them to create.

WHAT STILL NEEDS TO BE DONE?

Computer Science is a practical endeavour where you learn from your mistakes. I have attempted to remedy the practical failings where I can but it is critically important to recognise the linear assessment model may strengthen the academic aspect of Computer Science teaching but it fundamentally de-skills the students.

YOUR WISH



I wish for Computer Science to be recognised as a skills based discipline; and the methodology for student assessment to be based on what they create rather than what they memorise. I also wish for it to become an interdisciplinary discipline that's used within other subject areas. Analysing and presenting data is used in industry and could certainly be incorporated into subject areas such as Geography or History. The overall emphasis should be on allowing students to learn by doing and assessing them on what they create.



30 YEARS TEACHING

Dr Yota Dimitriadi

Associate Professor in TEL & Computing
Institute of Education, University of Reading

When computational thinking skills are taught explicitly, students take more risks with problem solving tasks.

YOUR GOLDEN MOMENT

I love finding cross-disciplinary ways to introduce Computing. One golden moment for me was bringing together an ecologist and a Secondary Computing teacher and together we created a Computing Outdoors lesson for primary classes and PGCE Primary students. In that lesson we explored the wonderful world of honeybees, role played and introduced topics like data representation, networking and computational thinking!

YOUR REFLECTIONS

MOST NOTABLE CHANGES

LAST 10 YEARS

Over the last 10 years schools have been enthused to enable children to make and create in Computing. Programming has been promoted as a fun activity that all can do. Talking about and creating computer games is not in the periphery of the curriculum anymore but has become more central and an exciting learning opportunity. At least up to Key Stage 3.

MOST IMPACT

ON YOUR TEACHING

The advancement of physical computing has also made more links between on-screen applications and tactile objects/hardware and as an extension, promotes deeper conversations about real-world examples of interactive systems, automation as well as the ethical, moral and social dimensions of technology use and digital creations.

WHAT STILL NEEDS TO BE DONE?

These planned activities have been against the backdrop of limited school budgets and still a limited number of subject specialist teachers. Having Computing as a Foundation subject has made timetabling such creative opportunities difficult and moving from STEM to STEAM remains a challenge.

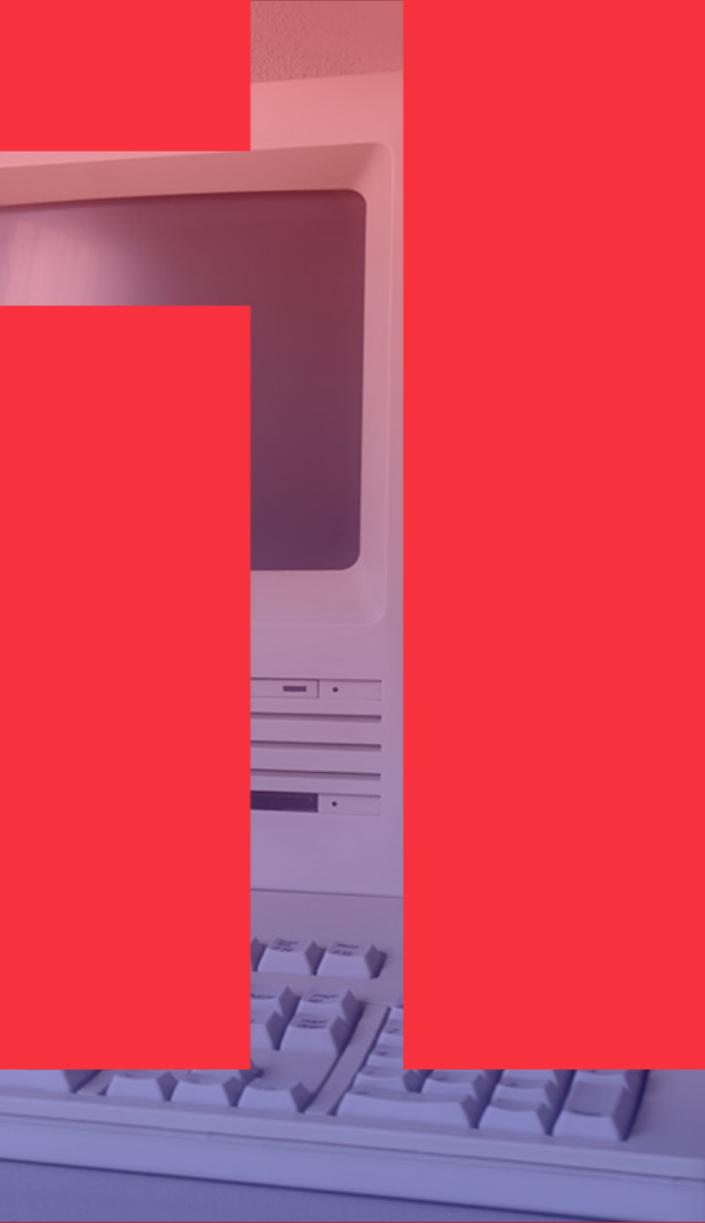
YOUR WISH



We recognise the wonderful inclusive nature of Computing and nurture cross-curricular opportunities across Art, Music, Languages; as a result, we encourage students who excel in those areas to consider Computing even if Mathematics may not be their strongest subject.



**DIGITAL
SCHOOLHOUSE**
together with



digitalschoolhouse.org.uk

 @digschoolhouse

ukie.org.uk

 @digischoolhouse



PlayStation.

