## Developing pedagogy by proxy through shared lesson resources

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### In this session

- 1. A curriculum policy change that needed research, because none had been done
- 2. Questions about policy and practice
- 3. Key things that the research uncovered
- 4. Practical application of that research to practice and to teacher education
- 5. Points for you to take away, think about and act on...







### Computing programmes of study: key stages 1 and 2 National curriculum in England

A high-quality computing education equips pupils to use computational thinking and change the world Computing has deen links with prediction to understand and change the world. A high-quality computing education equips pupils to use computational thinking creativity to understand and change the world. Computing has deep links with mathematical exception and decision and technology, and applications and technology. creativity to understand and change the world. Computing has deep links with mathematics, Science, and design and technology, and provides insights into both mathematics, Science. The arms of computing is computer existence in which results and existence in which results are a computer existence. mathematics, science, and design and technology, and provides insignts into both and artificial systems. The core of computing is computer science, in Which pupiling and artificial systems. The core of computing is computed by the provided provided the provided provided provided the provided provide and artificial systems. The core of computing is computer science, in which pupletuple the systems work that the principles of information and computation, how digital systems work that the principles of information and computation, and the transfer of the system of t taught the principles of information and computation, how digital systems work put this knowledge to use through programming. Building on this knowledge to use through programming to the information for the put this knowledge to use through programming to the information for the put the principle are equipmed to use information for the put the put the principle are equipmed to use information for the put the pu put this knowledge to use through programming. Building on this knowledge understanding, pupils are equipped to use information technology to create equipped to use information technology. understanding, pupils are equipped to use information technology to create systems and a range of content. Computing also ensures that pupils becomes the systems and a range of content. systems and a range or content. Computing also ensures that pupils beck literate – able to use, and express themselves and develop their ideas to interate – able to use, and express themselves and develop their ideas it and communication technology – at a level suitable for the future work.

participants in a digital world.

The national curriculum for computing aims to ensure that all pur abstraction, logic, algorithms and data

proce



### Computing programmes of study: key stages 3 and 4 National curriculum in England

Purpose of study

A high-quality computing education equips pupils to use computational thinking and A nign-quarry computing education equips pupils to use computational training creativity to understand and change the world. Computing has deep links with creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural sustains are computed science in which numble are mathematics, science, and design and technology, and provides insights into both nature and artificial systems. The core of computing is computer science, in which pupils are supported to the control of information and computer science, in which pupils are supported to the control of the co and artificial systems. The core of computing is computer science, in which pupils are thing to the principles of information and computation, how digital systems work, and how to taugnt the principles of information and computation, now digital systems work, and put this knowledge to use through programming. Building on this knowledge and continued to the information technology to contain an action of the principle of t put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, contact Computing also ansures that pupils harving alloys and programs. understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally and outside the state of the system of the state of the system of the s systems and a range of content. Computing also ensures that publis become digitally literate — able to use, and express themselves and develop their ideas through, information to the content of the con ilterate – able to use, and express themselves and develop their ideas through, information narticinants in a rimital world.

The national curriculum for computing aims to e can understand and apply the fundamental princip science, including abstraction, logic, algorithm

Information Technology

Digital Literacy

Computer Science

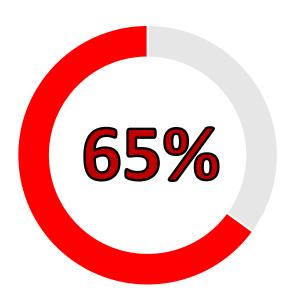




### How do <u>these</u> teachers know how to teach Computer Science?



Do not have a relevant first degree and teacher training qualification to teach ICT



Source: Royal Society 2012, p. 71-72





### Video-calling and desktop-sharing (Hidson, 2020)



### Communities of practice: 'anytime, anywhere personal learning networks' (Trust, 2016)

- Internet searching as a starting point
- Online sharing platforms
- Computing At School organisation face-toface and online
- Commercial and 'cottage industry' providers
- Programming reference sites







### **Teaching materials**

- 1. Bespoke lesson resources, created by teachers for a specific purpose
- 2. Gathered, unmodified resources located and used with little or no change
- **3. Repurposed** lesson resources, gathered and modified by the teacher to fit their lesson objectives more effectively









### Look to the theory

- We want to know what is going on – we look for evidence in practice
- We want to look at specific things and relate them to general things
- This gives us a theoretical underpinning so that practice, evidence and theory can be used to move away from 'gut instinct' towards a situation of evidence-informed practice







**EVIDENCE** 

**THEORY** 

**PRACTICE** 



### Subject Matter Content Knowledge

Pedagogical Content Knowledge (PCK)

#### Curricular Knowledge

The amount and the organization of knowledge in the mind of the teacher

Content can be represented and theorised in various ways

The teacher's subject matter content understanding in relation to the discipline

Subject matter for teaching

Aspects of content most germane to its *teachability*Representations: analogies, illustrations, examples, explanations, demonstrations

Understanding of what makes the learning of specific topics easy or difficult [educational] programs designed to teach particular subjects and topics

Instructional materials: texts, software, programs, visual materials, films, demonstrations etc.

Understanding of the characteristics of the materials



**Subject** 





Curriculum

### The educative role of resources – "PCK by proxy"

- The unwritten / unheard commentary that is part of any lesson resource
- This **knowledge** is the key to PCK
- A state of *transitional* pedagogical reasoning – scaffolded by a more knowledgeable other
- External knowledge validation resources and support





## But weren't these just very tech-savvy teachers?!

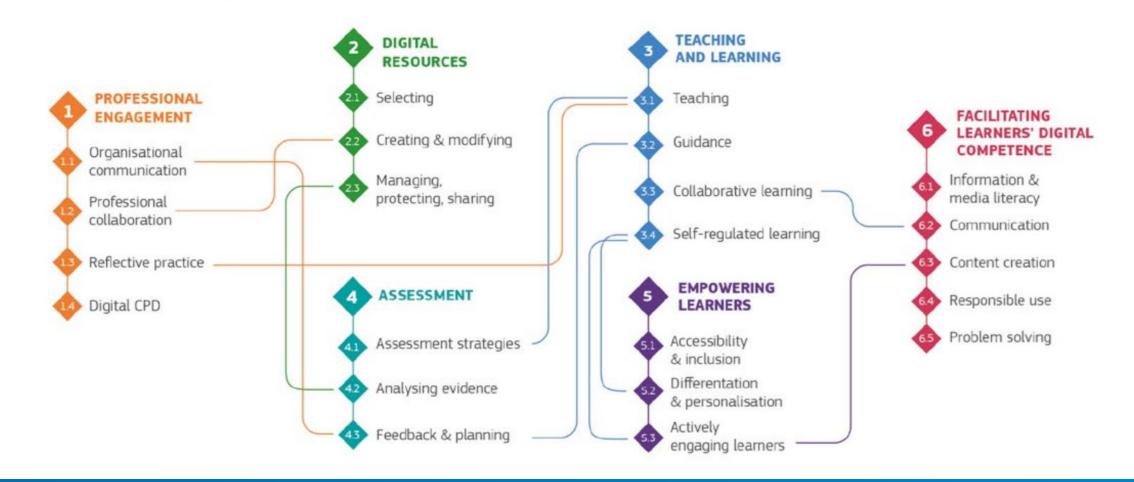


## ALL teachers need digital competence



Educators' pedagogic competences

Learners' competences





European framework for the digital competence of educators:

DigCompEdu - competences and their connections (Redecker, 2017, p. 16)

### **Digital Resources**



### Selecting digital resources

To identify, assess and select digital resources for teaching and learning. To consider the specific learning objective, context, pedagogical approach, and learner group, when selecting digital resources and planning their use.



### Creating and modifying digital resources

To modify and build on existing openly-licensed resources and other resources where this is permitted. To create or co-create new digital educational resources. To consider the specific learning objective, context, pedagogical approach, and learner group, when designing digital resources and planning their use.



### Managing, protecting and sharing digital resources

To organise digital content and make it available to learners, parents and other educators. To effectively protect sensitive digital content. To respect and correctly apply privacy and copyright rules. To understand the use and creation of open licenses and open educational resources, including their proper attribution.

TABLE 2: AREA 2 - DIGITAL RESOURCES

(Redecker, 2017, p. 20)



# OAK NATIONAL ACADEMY





Home

Lessons

**Teacher Hub** 



Save time and find inspiration with over 40,000 free, high-quality and adaptable curriculum-aligned resources.



### **Pupils**

Want to find out more about your favourite subject or revise what you've been taught? Missed a lesson at school? Visit our online classroom.

Lessons

#### **Teachers**

Plan ahead and save time with fully sequenced curriculum maps and lesson resources you can download, adapt and share.

Teacher hub

Planning





University of Sunderland

### ITT: How do citizens take action?

#### Secondary Citizenship KS3



Step 1:

**Original Oak Lesson** 

Step 2:

ITT lesson video

#### 2. ITT lesson video

Here, Helen Blachford provides a perspective on how, as an experienced teacher, they thought about the planning and delivery of this lesson. Watch an explanation of its structure and design and the pedagogical decisions behind it.

01:02 - Prior Knowledge

07:24 - Explanation

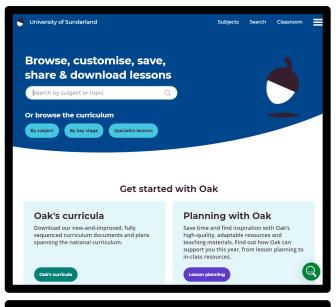
11:34 - Check for Understanding

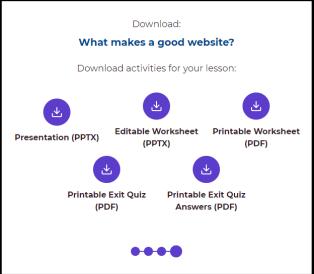
14:53 - Practice

16:54 - Assessment

19:59 - Reflection

Step 1







### Implications for your teacher education

- Embrace your communities of practice to develop PCK as part of evidence-informed practice
- Recognise that your developing **pedagogical reasoning** and **digital competence** are part of your initial teacher education and professional development

1

Know what you need to be able to teach and why

2

Know how and where to find resources and ideas

3

Know how best to **teach** to your students

4

Know how to re/purpose materials and ideas



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