

SECOND EDITION

TEACHING  
COMPUTING

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Los Angeles | London | New Delhi  
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## CHAPTER 1

# SO YOU WANT TO TEACH COMPUTING?

### **This chapter explores:**

- how the book can help you
- a philosophy of education and the development of your own philosophy of education
- the meaning of education, teaching and learning today
- the purpose of the curriculum in schools and how this is changing
- how computing fits into the curriculum
- what it means to be a reflective professional and how research can help
- key people you will be working with in school computing departments
- the future prospects of computing in the school curriculum.

Teaching is an exciting and rewarding career. You will be working with people who have innate curiosity and love learning through creative and exciting approaches. While we know the rewards of the teaching profession, we also recognize the challenges

you will face. We hope that this book will be of practical use to you when taking your first steps as a new computing teacher.

We are both teachers, teaching across the secondary age range and in further education. We are strong believers in peer support and have gained much from our own network of peers over the years – none of us is perfect and we believe in sharing ideas and approaches to help us all become better teachers. Our own career paths have now led us to higher education where we train people who want to become computing teachers. The principle of sharing ideas is evident in our work with our colleagues and in how we encourage our students to engage with (their own and their pupils’) teaching and learning. We hope that this book will allow us to share ideas with you to help you become an excellent computing teacher.

We teach people from many different backgrounds who enter the profession through a variety of routes: undergraduate degrees with recommendation for qualified teacher status (QTS) or Professional/Postgraduate Certificate of Education (PGCEs) with the possibility of gaining Master’s-level credits. We recognize the unique talents, skills and personalities that each beginning computing teacher brings to the profession, and we hope we meet the needs of such a diverse audience. However, whichever route you are taking into teaching, your end goal remains the same: to be a successful teacher of computing. We have tried to make this book useful for all of you.

## How this book can help you

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This book is essentially practical in its nature. We aim to give you pointers to relevant research, but we do not intend to become over-involved in exploring this (there are many books and journals that will allow you to explore relevant research in more detail). The ‘What the research says’ sections explore an aspect of education and some of the associated research in more depth – you can use these as starting points for your own research. The approaches we explore are based on our own experience, that of our colleagues, our students and from research. This book can be used by those who are studying on undergraduate, PGCE or school-based routes into teaching who want practical support, or by those who have just completed their studies, or it can provide a framework for those supporting beginning teachers. There is a companion website which offers additional materials (weblinks, video clips exemplifying issues explored in the book, additional commentary, pro formas and so on), but this book can be used as a stand-alone resource too.

## I am thinking of becoming a teacher

Those who are considering becoming a teacher can use this book to gain an insight into teaching and learning approaches and the role of the computing teacher. You will

gain an insight into current issues in computing education, what you are expected to teach, as well as the fundamentals of planning, differentiation and classroom management strategies. These areas are usually explored during interviews for teaching courses. It will also give you an overview of computing teaching allowing you to make a more informed decision about your career path (see companion website [study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e) video clip, *Rewarding career*, to hear Richard talking about his teaching experience). You can use the points for reflection and further reading texts to help explore your own thoughts on teaching and learning.

### **I am studying on an undergraduate route into teaching**

The book will give you practical help and support in the core responsibilities of a computing teacher. It will help you to identify appropriate teaching and learning approaches for your pupils and the topics you are teaching, exploring differentiation, assessment and how to plan effectively. Throughout the book, you are asked to reflect on or investigate topics to help you to identify your own beliefs, style and the most appropriate approaches for you as an individual, developing teacher. The book also identifies relevant research that you should explore further using the weblinks and suggestions for further reading at the end of each chapter and on the companion website. The transcripts and scenarios in the chapters and the video clips on the companion website ([study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e)) exemplify points in the text. You should look for further examples during observations on placement and in your own practice. The points for reflection and research links (see companion website) can help you to identify a suitable topic for your dissertation for your final year.

### **I am studying a PGCE which includes Master's-level credits**

Many of your requirements will be the same as an undergraduate, although the condensed nature of your course will see you wanting immediate answers to problems. This book can be used either as a textbook to provide the overall picture for teaching and learning in computing, or you can dip into it to find answers to particular problems or issues you are facing at that moment in time. The transcripts and the video clips (see companion website, [study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e)) will help you to quickly identify how the theory discussed in the text will apply in practice. You should supplement this through your own observations and reflections during your school placements. The points for reflection, research identified in each chapter and the sample research questions on the companion website will help you to identify suitable topics for Master's-level research. We would strongly recommend that you follow up the research identified in the book and the further reading and weblinks at the end of each chapter and on the companion website.

## **I am on a school-based route into teaching**

This intensive, employment-based route into teaching will need immediate answers to classroom situations. Before you start on the programme, you may want to read the book as a textbook to give you an insight into the issues you will face over the next year of your training. You will then be able to dip into the book as and when you need to address particular issues. You should use the transcripts and video clips on the companion website to help you identify how theory translates to practice. You will need to develop reflective practice to help you identify how you are applying theory in your own classroom. You can use the points for reflection to help stimulate discussion on relevant issues with your mentor. It may also be helpful to revisit the points for reflection and research identified in the book and on the companion website if you pursue a Master's qualification at a later date.

## **I am a NQT**

This is a busy and demanding year when it can be difficult to balance your continuing professional development with adapting to a new career. The latter chapters provide guidance on your newly qualified teacher (NQT) year, possible routes for developing and extending your professional role and for building further on the standards for qualified teacher status which you met through your training. This year should enable you to experiment with different approaches and to find your own style. The book will help you to reflect on these areas and may suggest different ways of discharging your professional role. In the future, you may opt to study for a Master's qualification. The points for reflection in the chapters, research methods and research ideas on the companion website could be revisited to guide you and provide ideas for your dissertation.

## **I am a mentor for beginning teachers**

This book will provide you with an overview of what beginning teachers learn and some of the requirements of Master's-level courses. The book identifies points for reflection in each chapter which could be used to stimulate discussions or research ideas that you could use to help the student teacher identify and develop their thoughts for assignment work. Some student teachers will seek support from you for their assignment work. We know that many computing teachers who studied IT or computer science at university may not have engaged in dissertation-type research before (instead, completing practical projects). There are two different models for research provided on the companion website ([study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e), Chapter 1 and 10 resources) which will provide you with an insight into and

framework for supporting students with this type of work. Discussion of theory in the book is supported by transcripts of classroom practice and video clips on the companion website. You could use these to help beginning teachers identify and reflect on the practice they are observing and to analyse their own practice.

## Philosophy of education

You have decided that teaching is a potential career path for you. You may be just starting on this journey or you may already be some way along the path. It is worthwhile pausing to reflect on the beliefs and values you are bringing to the profession and the broader context of education which may inform your own philosophy of education.

Every day we all use words and concepts that we presume convey the same perceptions and ideas to the people around us. Only very infrequently do we analyse the words we are using and what we actually mean by them.



### Reflection Point 1.1

Consider the following words and the prompt questions.

#### *Education*

What is education? What is its purpose? When does it happen and how?

#### *Teaching*

Who is a teacher? Are teachers the only people who teach? How is teaching different from training? What makes a good teacher and why?

#### *Learning*

What is learning? How do we know that learning has happened? How do we learn best? Is learning involuntary or do we have to consciously learn?

Think about how you use these words and what you mean by them. Do you think that your perception of them is the same or different to other people's? What may cause differences in perception?

In this section, we do not aim to provide answers to these questions (as there are not necessarily any right answers to give), rather what we want is to cause you to think about them and start to examine your own views and beliefs.

## Education

Our view is that education is a holistic approach to the development of an individual. It should develop their knowledge and understanding of the world around them and provide them with the skills to function in society (which includes, but not exclusively, economic contribution). This, then, is more than just teaching facts and how to apply them; rather it is to do with how an individual relates to and engages with others, the contribution they make to society, their own self-awareness, self-confidence and ability to function in the world. We would also take this further, for education and learning should surely not stop when a person leaves an educational institution (be that school, further education or university). A role of education should also be to inspire a love of learning and to develop an inquisitive mind. This should not always be for economic gain, but a personal curiosity to find out more about the world around us, leading to a greater understanding of those topics that interest us. Some of this may overlap with jobs or career aspirations, but we hope that pupils leave school wanting to know more about a plethora of subjects, with a real love of learning for its own sake.



### Reflection Point 1.2

What do you believe?

- Why do you think education is important?
- How did your education influence your life and why?
- Why do you want to be a teacher?

(See [study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e) for further prompts to help you devise a philosophy of education.)

## Teaching

The best teachers are those who have a real passion for their subject. They communicate their excitement to pupils and are creative and innovative in their teaching. They inspire in pupils a similar love for their subject and a desire to know more about it. A teacher is generally deemed to be someone who has been appropriately trained and who works in a school, and certainly that is the interpretation we are using in this book. But is that all? When a parent teaches their child to ride a bike, to share their toys or learn their times tables, are they not acting as a teacher too? If we have a mentor at work who shows us how to do our job and helps us settle in,

are they a teacher as well? If we examine these broader definitions of 'a teacher', we can see the holistic nature of teaching and educating: there are multiple factors influencing a pupil's development, with teaching and learning in school being only one of these. In fact, it could be said that every individual teaches children through their words and actions.

In Reflection Point 1.1, we asked you to consider the difference between teaching and training. Training aims to provide a specific, usually narrow, skill-set. It is often related to a particular task and the skills developed may have limited value away from that task. Teaching is about development of the whole individual, not a focus on developing a particular skill. Teachers should be concerned for the whole person, not just how that individual pupil relates to their subject area.

## Learning

There are many theories of learning. During your training as a teacher you will no doubt explore the theories of Vygotsky, Dewey, Piaget, Kolb, Gardner, Bruner and so on. You will be expected to relate these theories to your own practice and identify what it will mean for you in the classroom. The work of these theoreticians (and others) has helped us to move forward in our understanding of learning, but there are no definitive answers. Also, these theories were not always intended to be used by educationalists; they are more often related to the study of psychology and have been adapted for use by teachers.

Learning is sometimes done as an isolated activity, for instance reading a book for our own interest, but usually we learn within a social context with other people. Distance learners frequently express a feeling of isolation, are often anxious and need more additional support than those learning in a face-to-face context (McInnerney and Roberts, 2004). Perhaps this indicates that humans are more naturally adapted to learning in a social context and often in collaboration with others.



### Reflection Point 1.3

Consider how you learn best, perhaps focusing on something that you do or know particularly well, and consider how you learnt it. What makes that form of learning most effective for you?

Now consider a situation where learning was not effective. What made this learning experience ineffective? How could it have been improved?

What lessons can you learn from this reflection for your teaching and learning practice?

Learning with and through collaboration with others, for instance in group or paired work, can be particularly effective. Ofsted (2005: 19) identified that in some cases teachers were not encouraging pupils to use talk sufficiently. The report states the 'importance of pupils' talk in developing both reading and writing'. In 1976 Barnes identified that our use of language (in talking and free writing) helps us to reshape our experience, helping us to learn. How often do we talk through a problem to help us understand it better or to reach a solution? Talking helps us to clarify our thoughts and develop our understanding. Vygotsky theorized that those who engaged in private talk (either internally or out loud) were more able to progress in their learning and become better learners. The way we structure learning opportunities in our classrooms will influence how much is learnt and becomes embedded knowledge for pupils. It is too easy for pupils to learn a required or expected response without developing a deeper, more personal understanding of the concepts we are teaching. We want pupils to develop their own understanding and knowledge rather than simply regurgitating ours.

People have a thirst for knowledge and understanding; we want to know 'why ...?'. As infants we start to develop our understanding of the world in which we live and this continues as we grow: learning is a continuous process. Sometimes we deliberately set out to learn something new; at other times we learn almost unconsciously through observing or listening, while we watch television, talk to our friends or read a Twitter stream. As teachers, we need to exploit pupils' natural desire to learn, to utilize their learning outside school and encourage them to actively engage in the learning process and to become self-regulated, motivated, lifelong learners.

Learning is done by an individual – we cannot force them to learn no matter how hard we 'teach'! Teaching is not the same as learning, but it is sometimes perceived as being the same by beginning teachers. Most people will agree that they learn best (and improve) through hands-on practice. This means that we need to let go of teaching from the front of the room and instead provide opportunities for pupils to learn through practice. Strategies for encouraging learning in your classroom are explored throughout the book, but particularly in Chapter 3.

## The role of reflection

Reflection is typically used in complex and dynamic situations, helping us to develop our understanding of the interplay of different factors and how we can better address similar situations in the future. The majority of people have to work hard at developing reflective practice; good quality reflection does not come naturally. You will need to dedicate time and effort to improve your skills in this area.

Reflection is a difficult skill to learn. It requires critical thinking skills, the ability to analyse a situation, to synthesize different views from peers, mentors and from research, and then to develop ideas to help improve your practice. It is also a cyclical process: once you have developed your ideas and put them into practice, you should naturally evaluate their success and reflect on the outcome and whether further changes are needed.

Reflection moves through a number of stages (see companion website, [study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e), for transcripts with commentary and video clips demonstrating reflection). There are a number of models available that may help you to develop your reflective skills. Typically, the stages include:

1. Briefly describing what you have done or what has happened.
2. Broadening and deepening your understanding of what has happened and why through further reading and discussion.
3. Considering and analysing the situation – how it may be repeated or changed in the future.

Others may have different numbers of stages or break the stages down further, but essentially the process remains the same. Figure 1.1 provides an example of how a beginning teacher has reflected on an incident in class.

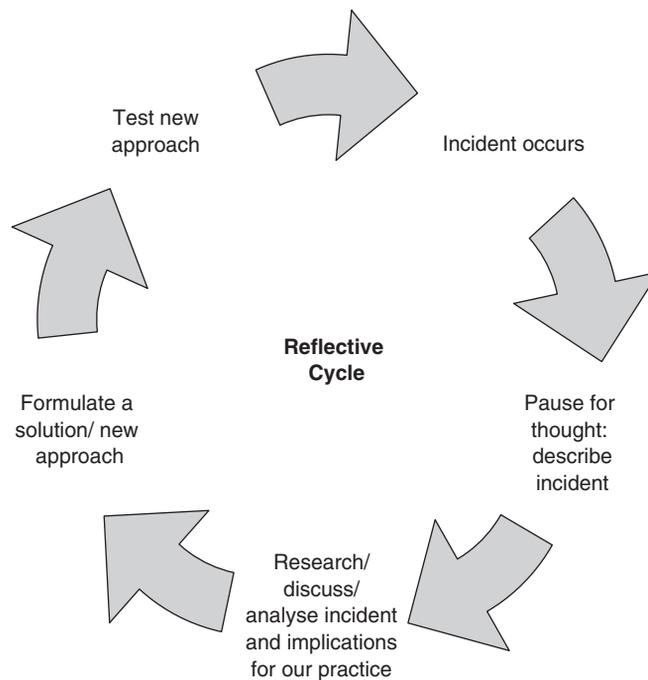
<b>Example: Reflective practice</b>	
I asked two pupils to demonstrate their work at the end of the lesson and for others to critically evaluate the work. A number of the comments were negatively phrased and had the potential for bullying: I needed to stop the pupils who were doing this. Overall, though, the pupils enjoyed demonstrating their work and others got ideas from what they saw, which suggests that it is a worthwhile activity.	<i>This section shows the teacher describing the incident.</i>
Black et al. (2003: 51) state that: 'students' learning can be enriched by marking their own or one another's work, whether this be classwork, homework, test scripts or presentations to the class.'  This suggests that I should try again with pupils sharing their work, but I need to be able to avoid the potential bullying of negative comments.  Bereiter and Scardmalia (cited in Batho, 2005: 81) on modelling writing:  'The thinking that goes on in composition needs to be modelled by the teacher, who can thereby show the problem-solving and planning processes that ... pupils are often unaware of ... and so that they can benefit from observing and discussing each other's mental efforts.'	<i>Here the teacher is drawing on research and starting to reflect on what happened</i>
It seems to me that I may need to model the techniques for effective critical evaluation of work. Perhaps I need to produce a sample piece of work and then work through it showing the class how to critically evaluate – if I start off modelling the technique, I could then encourage the pupils to join in allowing them to practise on a 'safe' piece of work. We could draw up some rules for critical evaluation together!  Next lesson I will model critical evaluation using a sample piece of work I have created and as a class we can try to establish evaluation criteria that pupils can use with their own and each other's work.	<i>The teacher is reflecting on how to improve classroom practice and identifying concrete solutions</i>

**Figure 1.1** Example of reflection in practice

As can be seen in Figure 1.1, the reflective process is cyclical. The teacher has reflected on the incident and has identified a possible way to improve classroom practice. Once those changes have been implemented, further reflection on its success and any further improvements would be needed. Figure 1.2 shows the cyclical nature of reflection.

You may wish to explore some of the models available to help you reflect. We find Gibbs (1988) a particularly useful structure.

Reflection is an important skill for teachers to possess. It enables you to identify issues and formulate solutions, and it means that you should become more adept at noticing those small details in your classroom that can have a big impact on your lesson. This also helps to inform other aspects of your practice, including research.



**Figure 1.2** Reflective cycle

### The role of research

As a beginning teacher, you will be making sense of a whole range of information and evidence, textbooks, lectures, government publications, Ofsted reports, journals and Internet sources. Coupled with this, you bring a whole set of experience, values and beliefs of your own to your professional practice. Research and evidence should be the lens through which you make sense of this wide range of opinions, fact and experience.

During your course, you will engage with research for your own personal development as well as for assessed aspects of your course. This will continue throughout your career; currently many teachers will gain a Master's-level qualification. As a computing specialist you may have already engaged with project work where you have used a systems approach to collect and analyse evidence – for example, conducting end-user interviews, collecting current documentation and observing workplace practices. This experience will provide a good foundation for developing some of the analytical techniques that are required for research. However, you may now be asked to engage in research that applies to education rather than systems development and this can look very different. It is important that you have experience of a variety of research methodologies to enable you to engage effectively in research now and in the future.

There are various forms of research and methodologies, and for comprehensive details on these, we would recommend consulting a book such as Cohen et al.'s (2011) book *Research Methods in Education*. On the companion website ([study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e)), we present two approaches to research for your consideration. The first is the typical pattern of a research dissertation (Chapter 1 web resources) and the second explores action research (Chapter 10 web resources). If you are mentoring a student teacher, you may also find these approaches helpful when discussing research methodology.

## Professional issues

Teachers have an immediate and lasting impact on children and young people, which may continue to affect them throughout their lives. What you say and do guides pupils when forming opinions of the world around them and, more importantly, of themselves. Professionalism is connected with how you behave, which is influenced by your values and beliefs. It is of paramount importance that you act in a professional manner throughout your career. Your dedication to promoting effective teaching and learning, helping pupils to achieve to the best of their ability, will be underwritten by your professionalism.



### Reflection Point 1.4

Think of two or three people who you feel are professional in their approach. What contributes to your view of their professionalism? Write down the characteristics of professionalism.

Identify areas where you meet these characteristics and aspects of professionalism that you need to develop further.

## Shaping the curriculum

Schools and the education system exist in a complex arena. Everyone has an opinion on what schools should do and what education should achieve: somehow these different perspectives must be reconciled. In some countries children have a legal entitlement to study computing (or a similar subject). In England that would be the National Curriculum and its associated Programme of Study for computing (DfE, 2014a). We will refer to this as 'NC' throughout this book; if you work outside of England then substitute the curriculum from your country or state. The NC is structured around programmes of study for each subject. Computing has a discrete programme of study which details what should be taught throughout the school years. The NC spans four key stages:

Primary: Key Stage 1 (Years 1–3) and Key Stage 2 (Years 4–6)

Secondary: Key Stage 3 (Years 7–9) and Key Stage 4 (Years 10–11).

Although teachers sometimes refer to post-16 as Key Stage 5, this stage of education does not fall within the NC and the key stage structure.



### Reflection Point 1.5

What is the purpose of school?

Is this the same or different to the notion of 'education'?

What should we achieve through education and how might views differ between stakeholders (i.e. parents, teachers, governors, employers, universities, government)?

Everyone has a view on what education or schooling should be. This is typically based on their own experience of school as a child and their perceptions of the quality of education, which are generated by the government, the media and any young people they encounter. The difficulty is that these views are usually based on historic, narrow or distorted images of schooling. Professor Mick Waters has significant experience of working in and with schools in a variety of roles from teacher to Head of Curriculum for the QCA, the former body who advised on the NC. He identifies that schooling is a small part of a person's education; children and young people spend less than 20% of their time each year in school (Waters, 2013). Yet, the definition of 'education' for our young people changes depending on context, time and place. While at the QCA, Waters commissioned consultations with stakeholders that identified three principal aims. These were that young people should become:

- successful learners who enjoy learning, make progress and achieve
- confident individuals who are able to lead safe, healthy and fulfilling lives
- responsible citizens who make a positive contribution to society (Waters, 2007, 2008).

These appear to be rational aims for education, whether this is provided via schools or through other learning opportunities.

The NC identifies the *minimum* entitlement for pupils in community schools and the expectation is for teachers, departments and schools to build upon this, delivering a broader and richer curriculum for children. There are many opportunities for developing an enriched curriculum, for example through cross-curricular projects with other subject areas or utilizing projects from external agencies like Apps for Good or the BBC News Day. The challenge for teachers is meet the NC requirements and to make this learning relevant and inspiring for their pupils.



### Reflection Point 1.6

Review the audit on the companion website ([study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e)) and consider if your subject knowledge is broad enough to address all of the topic areas raised.

What else do you think should be taught in computing lessons? Are there other topics that inspire you which you would want to include? How might you achieve this?

## What is computing?

The Royal Society offers useful definitions for different aspects of computing, including digital literacy, information technology and computer science. These are explored in more detail in Chapter 2.

### Part of the jigsaw

Just as digital technology is permeating all aspects of our lives, it is becoming an integral part of teaching and learning in schools. There are three roles for information technology in school:

1. Computing is a discrete subject within the NC. The programme of study gives details of concepts, skills and processes which pupils should learn. These will include the underpinning theory and application of computing principles enabling pupils to become confident and discriminating users of information technology.

2. Information technology applications and resources are used in other subjects as tools to enhance teaching and learning. For instance, geography may use Google Earth to explore geological features of land disrupted by tectonic plate movement, or modern foreign languages may use video conferencing to converse with pupils in a school in France. These subject areas are using computer suites and digital technology to enhance digital literacy – but not directly teaching the concepts of computing.
3. IT systems are used by teachers to plan and administer lessons and their other duties. This may include using computers to create worksheets, upload material to a virtual learning environment (VLE) or using electronic mark books to analyse pupil data.

There is a clear distinction between the use of technology and the teaching of computing. Simply using technology in a lesson does not necessarily provide learning opportunities for the underpinning concepts; it will not always build and develop capability. Historically, the forerunner to computing was a subject called ‘information communication technology’ (ICT). ICT was sometimes taught through cross-curricular delivery using the argument that because ICT was *used* in other subjects that it was being *taught* through those subjects. This use could help to reinforce the learning that had already taken place in an ICT lesson. However, teachers of other disciplines are, quite naturally, focused on their own subject area, not on teaching concepts related to computing. To try to explain this distinction more clearly, let us consider the teaching of English. English is read, spoken and listened to in every subject area, yet the legitimacy of teaching English as a discrete subject is never called into question (nor are we advocating that it should be). It is understood that there are other concepts and processes that require a subject specialist and dedicated curriculum time to be explored. This is the same in computing.

One aspect of the computing curriculum that has been hotly debated is digital literacy, in particular how and where responsibility for developing these skills should rest. Digital literacy relates to the competent and efficient use of the digital technology that most people use every day. Contrary to popular opinion, young people are not always effective users of technology, although they may be very competent for leisure purposes. The prevalence of IT resources in schools for cross-curricular use may lead to some schools sharing the responsibility for developing digital literacy across subject areas. This will mean departments working more closely together to identify linkages between subjects and timing delivery of topics to enable these to coincide and learning to be consolidated. Introducing cross-curricular projects that help pupils to explore the integrated themes across a range of subject areas helps de-fragment pupils’ knowledge of different curriculum areas. Computing can have a central role in this.

With an increasing use of digital technologies in school, other teachers will be seeking support and ideas from computing teachers and staff. This presents a huge opportunity for computing teachers, who will be able to influence the use of technology in school and be in a strong position to collaborate on developing a more flexible curriculum that supports greater use of digital literacy in innovative and creative ways.



### Reflection Point 1.7

What role do you think the computing department and staff should have in advising and supporting staff from other subject areas? How do you think cross-curricular projects may benefit pupils and staff? Are there any disadvantages to cross-curricular projects?

## Beyond the curriculum

The curriculum for computing is demanding. Usually, computing at Key Stage 3 is allocated one 60-minute lesson per week. Designing a curriculum that includes a fundamental understanding and application of computing, development of an IT skill-set, and pupils who are confidently and competently digitally literate, plus opportunities to explore cross-curricular links, is challenging. For instance, many pupils struggle to use the keyboard efficiently: they are frequently confused about the use of the shift key (particularly when Caps Lock gives a capital letter equally well!); they do not understand how to use or set tabs; keyboard shortcuts are a mystery. When entering Year 7, pupils may never have used a network (with shared peripherals, their own login and password and own area to save work); they may not understand setting up directory structures, naming conventions and the relevance of file extensions. The challenge for a computing teacher is to find time to incorporate these fundamentals into the curriculum, through either integration into other topic areas or by addressing these in a separate unit at the start of the year.

Many pupils will be very familiar with social networking, gaming, storing photographs, downloading music and so on. These tend to be topics we have not traditionally taught. We may touch on copyright issues related to downloading music, and e-safety around publishing photographs and using social networking sites. Some teachers, though, are starting to exploit social networking tools (such as blogs or wikis) for educational purposes. We often assume that pupils know everything about the tools which they appear to access daily, but they frequently do not. For example, there may be a significant number of pupils who will not have home access to a computer and may not even have used email before.



### Reflection Point 1.8

Identify some ways that emerging technologies such as social networking tools, games and mobile technology could be used for educational purposes in lessons.

## Who's who in computing

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Teaching can be an isolated activity, with one teacher in front of a class of pupils, but there will be a number of people you will work with in a computing department:

The *Head of Department* oversees the operation of the department, including curriculum development, assessment and monitoring (including pupil data) and resource management.

*Your mentor* may be the Head of Department or may be another computing teacher. They will liaise with other staff to ensure your placement meets your needs.

*Computing teachers* fall into two categories: those who are computing specialists and those who are specialists in other curriculum areas, but also teach computing.

*Key stage co-ordinators* develop the curriculum and resources for a particular key stage. They will normally do this in liaison with the Head of Department and with other teachers.

The *network manager* and *technicians* are support staff who do not normally teach. They provide IT and network support for staff and will normally advise on the purchase or development of IT resources for the school (not just within computing). It is important to be on good terms with the information technology (IT) support staff as they set passwords and network permissions (essentially they can make your life easier (or otherwise) while you are on placement).

*Non-computing teachers* will book and use IT classrooms and resources for lessons requiring those facilities.

*Computing teaching assistants* are teaching assistants who specialize in computing and are attached to the department. They will normally support a range of pupils in computing classes. Teaching assistants who are attached to a subject area are able to develop an expertise in that subject, which can be more helpful to pupils. If a teaching assistant does not have any knowledge of computing, this can become a barrier to support which, as the teacher, you would need to manage.

It is important that you work effectively and professionally with everyone in schools. One of the lessons in this book is that good, creative teaching and learning strategies can come from a range of sources. Be prepared to listen and learn from everyone during your time in schools.

## Future prospects

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You are entering the teaching profession at a time of significant change (although education never seems to stand still). It is an exciting time, with opportunities for

people with new ideas, innovative approaches and a good knowledge of the educational potential of new technologies. The content and structure of what we teach is shifting. The coming years will measure the success of the changes made to the curriculum and qualifications landscape.

Change is driven either internally through needs identified by people within education or change is imposed from external sources. Many of the drivers for change appear to be from external sources, but the origin of some of these are from educationalists themselves: educational research informs government-driven change, for instance Assessment for Learning (Black and Wiliam, 1998). Teachers recognize that there are issues with teaching and learning today that need to be addressed, and some of these will require a fundamental shift in the way in which teaching and learning take place. There is continuing research into teaching and learning practice, but we need innovative, creative teachers to grasp the opportunities presented through research and to develop this into good practice in our classrooms today. We all need to consider what our dreams and aspirations are for education and how we can help schools to meet these challenges.

### Further reading

- Barrow, R. and Woods, R. (2006) *An Introduction to Philosophy of Education*. London: Routledge.
- Jarvis, P. (2006) *Towards a Comprehensive Theory of Human Learning: Lifelong Learning and the Learning Society*. Vol. 1. Oxford: Routledge.
- Mortimore, P. (ed.) (1999) *Understanding Pedagogy and Its Impact on Learning*. London: Paul Chapman Publishing.

### Weblinks

Futurelab support innovative ideas for using technology creatively for teaching and learning – [www.futurelab.org.uk/](http://www.futurelab.org.uk/)

James Atherton's website provides an overview of teaching and learning theories – [www.learningandteaching.info/](http://www.learningandteaching.info/)

Instructional Design provides information about instructional design principles and how they relate to teaching and learning, including sections on Learning Theories, Domains and Concepts – [www.instructionaldesign.org/theories/index.html](http://www.instructionaldesign.org/theories/index.html)

**Don't forget!** Visit [study.sagepub.com/simmonshawkins2e](http://study.sagepub.com/simmonshawkins2e) to find live links to each of these websites and other extra resources for this chapter.