E851 Professional Development with ICT

Part 1: Investigating teaching and learning with ICT

For this part of the course, you will work through the planning and carrying out of a small classroom investigation. This will involve setting aims and tasks, selecting your investigation methods and planning the research. You then move on to look at ways of carrying out and analysing the results. Finally, you will look at ways of reporting your classroom investigation, ending Part 1 with your completion of TMA 01.

Week 1: Establishing your aims and the tasks to be done

(10–12 hours)

The objective for this first part of the course is to help you develop your skills in investigating teaching and learning in your classroom. We will start by asking you to reflect on the work you did for E850.

Reflecting on E850

The focus of E850 was on curriculum development and other professional activities that you carry out as part of teaching (e.g. using ICT for recording assessment data). This culminated in an action plan, which was itself a programme of professional development and which covered what will be the main elements of this course (see the course aims on p. 5). It will be some time since you drew up this plan, and you may already have started, or even completed, some of the items on it. In this course we will ask you to:

- revise the action plan (Week 1);
- begin to implement it as you work through the course (Week 2);
- review it again, as part of TMA 02;
- reflect critically on how and why you changed the action plan, as part of your work for the Examinable Component.

The plan covered three areas of action:

1 The next steps you will take in developing the teaching and learning activities in your classroom.

2 The developments that you think will be needed in your personal skills and knowledge of ICT, and its use in the classroom and in your general professional work.

3 The implications of (1) and (2) for the school and, in particular, its development plans.
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Activity 1

Review your action plan (15 minutes)
Review each of the three areas of action outlined above. Note down any new thoughts you have on the plan, or any new developments both in your professional activities and in the school more generally, which may affect that plan. Shortly, we will ask you to think about what you want to get out of E851, so bear this in mind as you carry out your review.

The professional teacher in the twenty-first century
Predicting the future is always a risky business, especially when it is the future use of ICT in the professional activities of teachers. This is an area in which changes of all kinds occur rapidly as resourcing levels improve, equipment becomes more varied, and teachers investigate the transformative power of ICT within teaching and learning.

The recent ICT in Practice Awards website has a category dedicated to ‘Innovation and Change’. Here practitioners from a number of phases of education outline some of their ideas for using ICT in an innovative and sustainable way. You may find it well worth reading through their reports.

ICT in Practice Awards: http://www.becta.org.uk/practiceawards
Alternatively, visit the National Foundation for Educational Research (NFER) website and read the summary report of ‘Innovative classroom practices using ICT in England’.

NFER Research publications: http://www.nfer.ac.uk/research/down_pub.asp
Before you start on Activity 2, take time to think about the transformative, innovative application of ICT in teaching and learning in your phase or subject area; then consider how this might impact on your action plan. In addition to any thoughts you may have had when you studied E850, consider how the issues raised now might affect your future development.

Activity 2

Setting objectives for professional development (20 minutes)
Later in this course you will be asked to consider both your personal and your professional development objectives, so you will need to begin to prepare yourself for this now. Make a note of your personal reasons for choosing to study E851 (you should aim for no more than ten). When you have completed your list, compare it to the course aims listed earlier (on p. 5). Don’t worry if you have expressed yourself somewhat differently; just consider how closely your reasons match the course objectives. Then keep your list somewhere prominent so that you can return to your objectives from time to time, and review them.

Now look again at your action plan and write up a new version, taking into account the wider focus of E851. The new plan should cover at least the next twenty weeks (as we will be asking you to revise it further over that period), but it can take in the whole of the next twelve months if you wish.
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Selecting a focus

We now want you to focus on the plan's first area of action – what you will do to develop your use of ICT in the teaching and learning activities in your classroom. The focus here is a little different from E851 in that we would like you to think rather more about the evaluative element. We will provide some tools to help you do this. Before you turn to them, however, we want you to decide on a clear set of classroom activities involving the use of ICT which you would like to investigate.

Activity 3

Selecting a focus of investigation (30 minutes)

From the teaching and learning activities you will be doing in your classroom in the coming weeks (Weeks 2–9 of the course), choose two that would be suitable to investigate, using the following criteria:

- The activities should relate to the areas you have opted to explore in your revised action plan.
- They should only last one or two lessons.

Write notes on what it is in particular you want to investigate, i.e. the teaching and learning questions/issues on which you would like to focus (jot down your thoughts on each item alongside that item). These should be specific: for example, if you are investigating the development of group work round the computer, you might want to consider the following questions:

- How much talk takes place around the computer, and what kinds of talk?
- What roles do different pupils in the groups take (e.g. are there any gender- or achievement-related differences)?
- What is the impact on learning outcomes of this sort of group work, and what is it about the presence of the computer which affects this?

You will need to keep your chosen questions/issues in the forefront of your mind as you carry out your investigation (although you may change its nature and scope along the way). The investigation should take in the following areas:

- What you know about the teaching and learning questions/issues raised (which will be more than just the impact of ICT).
- The kinds of information you need to collect while the activities are running (e.g. any classroom observations you need to make).
- How you might go about making sense of the information collected.
- What implications you draw or actions you take as a result of your investigation.

Reading 1

Section 1 of the Research Methods in Education Handbook Part 2 contains important information on the principles that underpin your investigation into the use of ICT in the classroom. Read through Section 1 (this should take about 30 minutes). The various subsections will help you when planning your investigation, but you may need to revisit them over the next few weeks as your plan evolves. For the moment, read them through and make brief notes about any ‘rules’ for researching which are new to you or significant for the work you have in mind. For example, who needs to be informed and from
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whom do you need to get permission in order to work in the way you propose?

We will now look briefly at the concept of practitioner research and the links that exist between this approach and action research. There has been a considerable growth in interest over recent years in teachers researching their own practice as part of their professional development. If this is new to you, the next reading will help you to see the origins and development of these ideas in a very practical way that links directly to teachers’ everyday work.

**Reading 2**

Read ‘Changing primary classroom practice through teacher research’, by Rosemary Webb, in *Supplementary Reading*. Note in particular the criticism that this approach seldom leads to radical change. This latter issue is particularly important in Part 3, ‘Professional and school development’, so bear in mind what Webb has to say about it when you come to this part of the course.

**Website work**

If you would prefer to read what some ‘experts’ and other teacher researchers have to say about teachers researching their own practice and professional development, then have a look at the research websites listed in the Resources folder on the E851 conference. As the *Research Methods Handbook* points out, you will find that publications use a variety of terms to describe the area of research and practice. Although there are often similarities in the way these terms are used, you may also find significant differences.

The Telematics Centre at the University of Exeter School of Education offers creative solutions for the effective use of ICT in education and business. It has established the potential of ICT in a range of contexts and settings, and leads a number of complementary projects both in the UK and internationally. Staff at the Centre have expertise in the development of educational services, creation of multimedia learning material, management of change, staff training, research and evaluation.

The Telematics Centre: [http://telematics.ex.ac.uk/](http://telematics.ex.ac.uk/)

NFER is an independent body undertaking research and development projects in all sectors of the public education system, whose aims are to gather, analyse and disseminate research-based information with a view to improving education and training.

NFER: [http://www.nfer.ac.uk/default.asp](http://www.nfer.ac.uk/default.asp)

The British Educational Communications and Technology Agency (BECTA) also supports research involving the use of ICT, and has established an ICT Research Network with a varied membership.

BECTA: [http://www.becta.org.uk/index.cfm](http://www.becta.org.uk/index.cfm)
Week 2: Collecting information

(10–12 hours)

Even for a small investigation of the kind you will carry out, it is worth doing some systematic reading to check:

- what has already been done in the area you have chosen to investigate;
- that your subject knowledge of that area is up to date;
- how other writers and researchers have thought about (conceptualized) the current issues in that area;
- what methods of gathering and presenting information others have used.

By now you will have collected together a range of potentially useful material. In your Portfolio you should have the following:

- Reflections and notes on your work for E850
- Your action plan review
- Professional development objectives for E851
- Preliminary notes and decisions about your planned investigation
- Your notes on practitioner research

You should now extend your range to sources outside the course material. Although you won't have much time to take in many other sources, you should be aware of what is available. This may include books or journal articles, as well as useful websites.

Reading 3

In the Resources folder on the E851 conference, you will find a document called Research Using Online Information Resources: reading this will help you determine the relevant online resources for your study. The introduction outlines its purpose and scope, then 'Help and advice' takes you through the process of identifying keywords, using the notes you made during Week 1. There are also some introductory activities which are helpful if you need further guidance on making searches.

This document offers much practical information on using public and other libraries during the course, and gives details on electronic journals, where you will probably find the most up-to-date material. Subsection 6.8 deals with searching for material published by official bodies such as Ofsted and other government departments, which can be very useful for school-based research. Although you may be familiar with many of these sites, there may be some listed that will be new to you. If you are an experienced web user, you will find much in subsection 6.1.1 that relates to your existing professional practice with ICT. Example 6.1 presents one student’s step-by-step account of a personal search for information for professional use, which may give you a model to follow.

The range of the material available may be greater than can be accommodated in the time available to you, but you will find that the Online Information document contextualizes the ‘mechanics’ of searches in a very helpful way.
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Activity 4

Searching for useful information (30 minutes)

Using the notes you have compiled as you worked through the section ‘Selecting a focus’ (see Week 1), do the following activities:

1. Using the Online Information document, go through the process outlined in subsection 6.1.
2. Identify not more than five keywords that can help you with your search.
3. Outline the first two steps you propose to take, e.g. using the ERIC database, then checking the NFER website.
4. Post your ‘starting sentence’, ‘keyword’ list and first steps onto the E851 conference.
5. Keep the conference under review to find out about similar work proposed by other colleagues.

Conference and website work

Nos. 3–5 in Activity 4 above form this week’s conference and website work.

Reading for information

When you start reading, you will find either that there is little which seems relevant to you, or that you are overwhelmed by the quantity of material available. Refer back to the Online Information document for ideas on how best to widen or narrow your searches.

As you read through your collected material, remember that yours is a small-scale project and you will need to cover a number of aspects in your write-up for TMA 01 besides the bare details of the topic you are studying. Remember, too, that the type of investigation you are doing will have a significant influence on the type of documentary material you find useful. You will have to be very focused in your reading, and selective about the material you collect and eventually incorporate into your report.

It is vital that you keep notes on the items you read – as your investigation develops, your ideas may change, and good records will save you time and energy if you decide to revise your original ideas. Also, keep accurate bibliographic references of the sources for the various items – again, this will save you a good deal of time.

One of the advantages of reading about other people’s work in the area you are investigating, is that you may begin to get ideas about the way in which you are going to collect information in your classroom. You may, for example, find that the area you are interested in has been researched by a major project team. While you don’t have their resources or their timescale, you could draw upon a single element of their work and investigate that in your own setting, using a different technique or with a different group of pupils. For example, a study by Sanger (1997), on technology use at home and in school for primary and young secondary pupils, raised some interesting points about what children ‘say’ they do at home and what actually happened when a researcher visited.
Weeks 3–4: Selecting methods and planning an investigation

(10–12 hours)

At this point your ideas about your investigation should be clearer and you will be in a position to make informed judgements about the most appropriate technique for your particular study. In the reading and other work for this week, you will come across ideas on a variety of techniques you can use. You will not need to give all of them equal consideration and, if you are clear about your approach, you can focus exclusively on one that is most relevant to you.

Teaching as a research-based profession

Today there is increasing interest in the idea that teaching, like medicine, should be an ‘evidence-based’ profession; that teachers need to be researchers themselves, and critical readers of research by others, in order to bring about improvements in their own practice and the attainment of their pupils.

This view is supported in both practical and financial ways by a number of agencies: for example, BECTA and the Teacher Training Agency (TTA) in England. Cordingley (1997) describes research work done by teachers in some large- and small-scale projects, and suggests that using research evidence can help them to raise pupil achievement. But, she feels, to do this easily there needs to be a body of high quality research on the questions that are of real interest to teachers, and evidence of what really works in classrooms.

Teaching is recognized as a complex process. Involving teachers directly in the systematic collection and interpretation of evidence enables them to have more say in setting the research agenda. It also ensures that the issues which confront them in their classrooms every day are addressed through research that is both relevant and accessible.

The TTA knows that many teachers have used research methods to carry out classroom enquiries, and acknowledges that this approach will help to develop their practice through:

- sustained and disciplined enquiry;
- exposure to expert thinking;
- the opportunity to experiment with new ideas in classrooms;
- the opportunity to reflect on those activities.

It is especially valuable when teachers can discuss their projects and share their findings with fellow practitioners.

- Teacher Training Agency (TTA): http://www.tta.gov.uk/home.htm
- TTA, Promoting Research and Evidence-Informed Practice: http://www.tta.gov.uk/itt/providers/research/index.htm

Reading 4

Read Craft, Chapter 7, ‘Methods of evaluating professional development’ (this should take 45–50 minutes). The purpose of reading this chapter is to help you select a technique to match your enquiry. As you read, make brief notes...
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and use them to help you answer the questions that Anna Craft poses at the beginning of the chapter.

Although the chapter focuses on evaluating professional development, it offers a clear overview of the range of techniques available to you as a ‘research toolkit’. As you read the chapter, keep in mind that your role is that of a practitioner researcher and not an external evaluator. Your concern is to learn from your practice and make improvements. Some forms of evaluation, such as inspection, are more about making pronouncements that what you (or any teacher) are doing is acceptable, for example, as part of maintaining accountability.

When you have identified a method that appears to satisfy your requirements, turn to Sections 2, 3 or 4 of the Research Methods in Education Handbook Part 2, whichever corresponds to the technique of your choice. These sections will help you to review your chosen technique in greater detail and establish whether your questions, etc., will obtain the information you need for your investigation.

Reading 5

Read the appropriate section of the Research Methods in Education Handbook Part 2 (i.e. whichever corresponds to the technique you intend to use). As you read, jot down some thoughts in response to the questions below, which have been derived from those set by Craft in the previous reading. The answers to these will form part of TMA 01:

- What are the strengths and weaknesses of your selected method?
- Why have you rejected the alternatives?
- Will the selected method provide the information you need?
- Will the method be acceptable to those involved?
- Are the time and resource implications of the method acceptable? Have you the time and the means to carry out an analysis of the data you are planning to collect?

Following is some advice on techniques associated with each of the sections in Reading 5. You may like to read this advice through before going on to study those sections in detail.

Getting information from documents and school resources

Section 2 of the Research Methods in Education Handbook Part 2 considers the various types of documents you may be thinking about using. Read the entire section, unless you know exactly what technique you will be using. When you are clear about that, concentrate on the relevant passage and note down in your Portfolio any key issues or action points that you need to attend to before beginning your classroom investigation. You may find that, in answering the five questions outlined in Reading 5, you will have already dealt with the matters that need attention.
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Multimedia documents

When we think about documents, there is a tendency to consider primarily or only printed or written texts, perhaps because these are the ones that have been most used by researchers in the past. However, visual and audio sources can be valuable for research purposes. Pictures, photographs, video, music, audio-diaries or CD-ROMs, e-mail or other types of web and internet material can all be considered under the general category of ‘documents’. The medium through which the document is obtained is less important than that each is thoroughly evaluated and not simply accepted uncritically. You need to bear in mind the people who produced the material, their purpose in doing so and the particular view they have, all of which will affect your interpretation of the document. So it seems reasonable to treat a piece of software as though it were a paper curriculum resource and to look, say, for any gender bias or racial stereotypes that it might contain, if this falls within the remit of your investigation.

Accounts of research published on the Web are often referred to as ‘grey literature’. Sometimes these accounts are put up by their authors in order to invite critical comment from their peers, and they may be very much ‘work in progress’. Therefore you need to be cautious about drawing conclusions from what you read, as the authors may still be in the process of formulating their own ideas. Equally, refereed academic journals take great care to ensure that the papers they publish are, as it were, ‘quality controlled’; this may not be true for other forms of publication.

Conference work

You should now e-mail details of your investigation to at least one and preferably more fellow students who have some elements of their research focus in common with you. This common feature might be:

- a topic (e.g. differentiation, questioning, organizing and managing resources, evaluating software in context, assessing outcomes);
- a research technique (e.g. interview or observation);
- a similar pupil age range.

Arrange to exchange information as you continue with your investigation work and data analysis. In this way your e-mail group can become an electronic research cluster, and its members can act as ‘critical friends’.

During Weeks 3 and 4 you will be able to follow the conference discussions about the various investigations that you and other students intend to carry out. This will provide you with useful feedback on your emerging ideas about the topic and the techniques you are considering. As with your reading, taking part in these discussions will help you to develop and refine your ideas.

Getting information from people

Section 3 of the Research Methods in Education Handbook Part 2 is structured in a similar way to Section 2: again, this should help you decide how best to read through this material. Even if you feel confident that you will not be using interviews, logs, diaries or questionnaires in your investigation, it is still a good idea to familiarize yourself with each type of approach: first, because this will not be the only piece of investigative work you carry out within your role as a professional; and secondly, because you may find, as many
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researchers do, that you must make changes to your original plan because of what happens as your investigation progresses.

Seeing what people do

If your investigation concerns what people actually do rather than what they think or feel or say that they do, then you will want to watch them closely rather than ask them questions. Section 4 of the Research Methods in Education Handbook Part 2 gives detailed guidance on a range of techniques for carrying out this method of collecting data. As with the other sections, it offers some suggestions on how you might go about reading the material.

Again, when you are considering the approaches suggested and exemplified in this section, keep in mind the scale of your investigation and the need to keep it manageable. In particular, be careful about the use of video and audio recording. At first glance, these two techniques would appear to allow you to ‘get on with’ your key activity of teaching while you collect your classroom data, and may indeed be the best approach for you. However, you will find that you need to set aside a great deal of time to review your recorded material and to make decisions about how you can transfer the important information into your TMA 01 submission. As a rough guide, it can take four hours to transcribe an hour of an interview and even longer if it is a classroom recording with the attendant difficulty of audibility. Video recordings of lessons are even worse, with ten hours of transcription for every hour of tape (assuming that you have ways of recording non-verbal behaviour). Then you will need time to make sense of what you have recorded (i.e. to analyse it).

You will probably find that to make good use of video or audio recording, you will need to confine yourself to very focused aspects of the classroom and quite small amounts of time: for example, when observing the kind of discussion children have while they are exploring a website you have asked them to look at, to see how they cope with sifting out the correct information; you will only need a few minutes of recording and you will be able to focus on what you are looking for in their conversation.

A note of caution

- The Research Methods Handbook will help you make decisions about the type of information you need in order to research your topic, and offers practical advice on how you can obtain it. You need to be confident that your selection from the research toolkit is right for the job you want it to do. The Research Methods Handbook covers both large- and small-scale investigations, and some of the suggested techniques may not be appropriate for you to use: for example, the use of diaries and logs might be impractical, given the number of weeks you have to complete this investigation.

- You will probably be a participant in the situation you are investigating, and you could, therefore, affect what is happening around you, even though that is not your intention. For example, you might be busily trying to note down the questions pupils are raising as they search for information on a website; but if they get lost, how do you resolve the dilemma that if you intervene you miss finding out whether or not they can rescue themselves? Should you let them continue long enough to find out that they are unable to rescue themselves, and then intervene? Whatever you decide, you need to note the action you took and the kind of advice you gave, whether you had to be quite directive or offered general advice only.
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Research ethics

It is very important that you think through the issues relating to research ethics, especially if you are wanting information from children or young people. You need to keep in mind the confidential nature of your findings, and to obtain beforehand the necessary permissions/consent to make your enquiries or carry out your observations. We have already made the point that you should be working with the knowledge of a senior member of staff: she/he can advise you on how the school usually handles this.

Two examples of research investigations

A nursery teacher, who had introduced two desktop computers into her setting, felt that the boys were dominating this activity; so she decided to carry out some systematic observations of the two areas. Bearing in mind her teaching duties, she devised a schedule for the observations which included the times when she would do this, the duration of the observations, and the detail of what she would look for. In her setting, there was an hour during each morning and afternoon session when the children were only using the inside space, during which the staff and helpers were all involved in directly supporting activities in this area. She therefore decided that this would give her the opportunity to make three observations of about five minutes each. Over a week or possibly two, she expected to accumulate a fair bit of information, and she adapted an observation schedule with which she was familiar so that she could systematically check the same things each time. She also had the suspicion that children only paid fleeting visits to the computer when there were no adults there to help them, so she added this dimension into her schedule. Over the two weeks she monitored what was happening; but, because of the interest other team members were showing in her findings during the first week, in the second week everyone in the team became involved and she was able to use these data as well as her own. As a result of their work, the staff were able to discuss what they had discovered and to make changes to their existing approach, which everyone felt would improve the quality of all the children’s learning engagement with ICT-supported activities. They were then able to monitor and review these changes over the rest of the term, to see if any further changes might be needed.

Having spent some considerable time working with his class on reading texts for information, a class teacher wanted to find out if the pupils remembered what they had learnt when they came to do similar work with factual material on CD-ROMs. He used observation techniques, but in contrast to the teacher in the previous example, he made detailed field notes of what actually happened when a pair of pupils carried out this work. As he had to fit these observations around his main teaching, he had to be somewhat opportunistic in deciding who and when he observed. The data he obtained were very detailed, and allowed him to learn a great deal about the effect of ICT on particular pupils completing particular tasks.

Activity 5

Planning your research (1 hour)

You should now be able to complete part of your research by entering the information onto the proforma in Appendix 1. The remaining sections can be filled in when you have collected and analysed your data.

An electronic version of this proforma is in the Resources folder on the E851 conference.
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Conference work

Post your proforma on your tutor group conference so that you can obtain comments from your fellow students and your tutor.

During Weeks 3–4 you will need to develop the material you are going to use when obtaining information from other people or observing in your classroom, i.e. your questionnaires, interview schedules or observation schedules. You should test these out at least once before you use them for your actual data collection, to ensure that whatever technique you use fits with your other teaching activities in a manageable way and collects the kind of information you want. If you propose to make field notes, try doing this in a situation similar to the one you will be in during your investigation. (It can be difficult to watch and write while you are teaching!) Meanwhile, keep abreast of what is happening in the E851 conference, and discuss your approaches with your tutor group.

You are expected to carry out the investigation during Weeks 5–8, and to compile and submit your report during Week 9. You therefore need to be confident that your chosen way of collecting information works well for you.
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**Weeks 5–8: Carrying out your investigation and analysing the results**

*(20–24 hours)*

By now you should be ready to put your research plan into action. However, just before you do so, have a quick check that everything is in place. Use one of the checklists in Appendix 2 to ensure that you have got your questionnaire, interview schedule or observation material absolutely ready, and that you have enough copies, etc., for the data collection period. Ensure that you and any other people involved know what your plans are and when they will be carried out. Prepare for the unexpected as much as possible – it can, and usually does, happen in most research. The *Research Methods Handbook* contains detailed advice on the practical aspects of data collection and will be useful to have with you while you work, in case you feel the need to check up on details or amend your plans.

It may be tempting to leave analysing your data until you have collected it all in, but this may not be the most useful approach. For example, you may find that an important interview question you thought was very clear is being interpreted by your pupils in a different way from what you intended, and you might want to consider making changes while you have the opportunity to do so.

Whatever the nature of your data, you need to develop a systematic method of dealing with your findings and then apply it consistently to all your material. Section 5 of the *Research Methods in Education Handbook* Part 2 considers how best to deal with different types of data – qualitative (5.3 and 5.4) and quantitative (5.5 and 5.6).

**Reading 6**

*Analysing quantitative and qualitative data*

In Section 5 of the *Research Methods in Education Handbook* Part 2, read subsections 5.3 and 5.4, or 5.5 and 5.6, whichever is relevant to the type of data you want to analyse. Note down the points you need to be aware of and how you should carry out your analysis.

This section also contains advice on presenting your data and including evidence in your investigation report. While the *Research Methods Handbook* takes a general approach, which you will need to follow when presenting your work for TMA 01, there are some specific requirements you need to observe. You will, for example, have collected the relevant material for the report from the work you did in the first two weeks of this course. Then later, you looked at what actually happened in your classroom. You need to draw these elements together both in your analysis and when writing up your report.
Week 9: TMA 01 – Reporting your investigation

(10–12 hours)

TMA 01 gives instructions on how to prepare your report. Complete the assignment as detailed in the Assessment Guide and send it to your tutor, making sure that you keep a copy. We assume that you will use a word-processor for this assignment; if so, please follow the guidelines on layout set out in the Assessment Guide.