Undergraduate Handbook for
‘Mathematics in Schools’
Mathematics in Schools

Undergraduate Handbook

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1. INTRODUCTION

Welcome to the ‘Mathematics in Schools’ unit. This Handbook is intended to give you a full overview of how the unit will run and to help you prepare for the challenges ahead.

The handbook contains material that may be useful to you as you prepare for your time in the school and as you prepare your assessed work for the unit. This will be supported by a training session and three or four tutorials during the first term when we will consider general aspects of working in schools and also the content that is specific to mathematics teaching, as well as weekly tutorials during your period in school. It is important that you read through as much of this Handbook as possible before the training sessions. It is compulsory that you attend these training sessions and tutorials. If you miss a training session or tutorial for a valid reason you must contact the unit lecturer to make up the material.

At various points during the unit you will be asked to provide feedback from your personal experiences as well as possibly completing a small number of questionnaires during the course. These will be provided by your unit organiser when appropriate and completion of them will be an essential element of participating in the course.

The unit is operating as part of a national scheme called the Undergraduate Ambassadors Scheme (UAS). UAS works with universities all over the country to develop similar modules in other science, technology, engineering and mathematics departments, and has links with various other subject organisations and professional institutions.
2. OVERVIEW OF THE UNIT

2.1 What is it and what do you get out of it?

The unit “Mathematics in Schools” will reward you with course credit for working as a ‘student-tutor’ with teachers in local schools and help you develop some valuable transferable skills. You may already know about ‘student tutoring’ schemes that work on a voluntary basis. Most of these run very successfully without giving course credit for taking part, but do provide immense satisfaction to the truly committed undergraduates who get involved. This unit is slightly different in that you are rewarded with credits towards your degree for the work you do in the classroom.

Of equal importance are the ways in which you will benefit as a result of doing the unit. You will learn important, marketable and transferable skills of benefit to you in employment and in life. A good degree is no longer enough in the competitive world of work so involvement in a course like this will be of great appeal to potential employers. The specific and transferable skills you will be able to attain include:

- Organisational and interpersonal skills
- Addressing the needs of individuals
- Time management skills
- Working in a challenging and unpredictable environment
- Staff responsibilities and conduct
- The ability to improvise
- Giving (and taking) feedback
- Handling difficult and potentially disruptive situations
- Public speaking and communication skills
- Team-working
- Standard teaching methods

You will gain experience of working in a professional educational environment and will learn about the key issues affecting school education today. You will have the satisfaction of making a positive impact on the education of pupils of all ages and the chance to act as a role model for mathematics. It is a chance to put something back into the community by sharing your knowledge and helping to motivate young people and raise their aspirations towards mathematics. You will develop your confidence in answering questions about mathematics and in devising appropriate ways to communicate a difficult principle or concept. You will develop your communication skills and gain a better understanding of your own level of expertise.
For those of you who are interested in teaching as a profession, this will be an opportunity to explore whether it is a path you want to pursue. You will learn to devise and develop mathematics projects and teaching methods appropriate to engage the relevant age group.

And you should get a lot of enjoyment out of this course!!

2.2 How does it work?

The unit will involve:

- Attendance at a 2-hour Training Session giving you an introduction to the fundamentals of working with children and conduct in the school environment
- Attendance at three or four tutorials during the first term to discuss the course and supplement the Training Session
- Undergoing a Disclosure and Barring Service (DBS) check, previously known as a CRB check, prior to entering the classroom
- Being paired with a specific teacher at your school who will work with you to identify your aims and objectives – you should meet this teacher for a planning session before Christmas
- Spending between ½ - 1 day a week in school for about 10 weeks, developing your role within the classroom
- Attendance at weekly tutorials during the second and possibly third term
- Completion of a Special Project
- Assessment of the module – further details are outlined later in this Handbook
3. YOUR TIME IN THE CLASSROOM

3.1 Overview

The schools and teachers with whom you will be working will be selected by the School of Mathematics, but you will have the opportunity of visiting the school and teacher to which you have been assigned prior to starting your work in the classroom. This should take the form of a planning session and should occur before Christmas. Between January and May you will spend half a day a week in the school for approximately 10 weeks. The exact schedule is flexible and will be agreed by you and the teacher in the planning session before Christmas. You will be able to review progress and discuss any problems with the unit lecturer either through the weekly tutorial sessions or by making an individual appointment.

The day and time of the weekly placement will be decided on an individual basis to match the timetable of you and the teacher. This will be decided in the planning session before Christmas. There is a large amount of flexibility in this arrangement. This flexibility will allow you to decide on a schedule that will both be of maximum use to the school, as well as giving you the most benefit out of your time there. However, it also puts the burden on you of arranging a time that will not interfere with your other university courses, but will also be suitable for the school, which will have a fixed timetable to work around. The placement may be organised so that you are involved in lessons with pupils of more than one age group. If the number of weeks for which you will visit the school is to be less than ten, this must be discussed with the unit lecturer, though in some cases it may be more than ten.

In general you will spend a few hours in the classroom each week. Your role in the classroom should progress from initial observation to constructive support of the teacher, although the level of interaction with the pupils must be agreed with the teacher, and should at all times be under the teacher’s direction.

The initial periods of observation should be used to study the teacher’s interaction with pupils, and the approaches taken to the introduction and development of topics and concepts. If possible, specific situations should be discussed with the teacher. On your first day at least one lesson should be purely for observation and you should fill out the Observation logsheet based on this experience. You should expect to become more involved, possibly working with small groups of pupils on specific topics or activities, or in setting up and helping with demonstrations. As you gain experience and confidence, you may be asked to take a more responsible role such as taking all or part of a lesson, taking the lead in an activity to demonstrate a principle in
front of a class, or in helping in some other way such as with a Maths Club, or with a talk about undergraduate experiences, etc.

You will be required to keep a log book of your experiences in the school. It is not expected that the teacher will read this log book, but you will need to use it yourself as a basis for the report that you will write at the end of the course as part of the unit assessment. The unit lecturer will need evidence that this log book is being kept and it will itself be used for assessment.

You will be expected to plan your own role in each lesson. These plans will need to be discussed with the teacher, who will provide feedback on them. The plans should also be available for discussion with the unit lecturer.

You will be required to implement a Special Project. The choice of the project should be made following discussion with the teacher and with the unit organiser. It should be targeted, where possible, at a specific concept or activity for which there is a perceived need in the school. The project may be a novel method of presentation appropriate to the topic, a particular demonstration or a pupil activity, and may involve the preparation of special materials. Think if you can leave something of lasting benefit to the school – something that could be used in subsequent years such as a class activity or worksheets. The nature of the project and materials must be discussed fully with the teacher. If equipment is being used, then safety issues must be addressed and the teacher’s advice should be carefully followed.

3.2 Assessment

The assessment for this unit will comprise four components:

1. A weekly log book. (15%)  
2. An end of unit written report (about 2000-3000 words). (40%)  
3. A 15 minute oral presentation. (30%)  
4. An assessment by the teacher, moderated by the unit organiser (15%)

The overall aim is to assess your effort and improvement in the following six learning criteria:

- Acquiring skills in communicating mathematics appropriate to the level of the students you are working with
- Working with others in an accommodating yet confident way
- Organisation, reliability and self-management
• Initiative and creativity in identifying what is needed by the school or the pupils and how you can help provide it
• Identifying and understanding the educational needs of students learning mathematics
• Self-analysis and critical evaluation.

You will **not** be assessed on whether or not you have shown yourself to be a potential teacher.

More detail about the assessment criteria and methods used are available in the Assessment sections of this Handbook and will be discussed in tutorials.

### 3.3 Learning Outcomes

The Learning Outcomes for this classroom-based unit are as follows:

• To provide undergraduates with an opportunity to gain marketable and transferable key skills including the communication of their knowledge of mathematics in a challenging educational environment.

• To give undergraduates a better appreciation of the level of their own expertise in mathematics, and to build upon this through the process of explaining the subject’s core ideas and concepts to others.

• To help undergraduates learn to address the needs of individuals and to think about methods of presentation that are appropriate to the groups they are working with.
4. PREPARING FOR YOUR TIME IN THE CLASSROOM

4.1 Introduction

The overall objectives of the training session, first term tutorials and this booklet are to ensure that you have the appropriate skills and background knowledge so that you make a positive contribution in the school. This will help you to feel comfortable in the role and ensure that you understand the environment and constraints within which you will be operating. By the end of the training process, you should feel that you have acquired, or identified within your existing skills, the following:

Knowledge:
• how education is structured in your part of the UK
• the National Curriculum – in particular with relevance to mathematics
• the teacher’s role and responsibilities

Communication Skills:
• talking and listening
• working with group dynamics
• engaging with and motivating a range of different people
• imparting good learning strategies
• setting boundaries (own and others)
• understanding of others’ experience

Attributes and Behaviour
You must be able to recognise your own strengths and weaknesses and impart enthusiasm for mathematics. You need to understand how to liaise proactively with your partner teacher, use relevant support systems when necessary and provide feedback as and when required. You will need to be diplomatic, patient, courteous, assertive and flexible.

Finally, and probably most importantly, you will have to demonstrate that you have not only understood the specific requirements of working with young people, but will be able to act on this knowledge.

4.2 Schemes of Work and Lesson Plans

Schemes of work set out what pupils should know about individual topics within subjects and how this knowledge builds on the previous modules and sets the foundation for subsequent modules at specific stages in their education. Teachers use schemes of work to prepare their lesson plans. Below is a synopsis of a scheme of work for a science topic:
Atoms and Molecules – for Year 8 (pupils aged 12/13)

Where the unit fits in

This unit relates closely to unit 7G 'Particle model of solids, liquids and gases' and unit 7H ‘Solutions’, in which the particle model is introduced and developed. However, if teachers wish to introduce the idea of particles through elements and compounds, it could be taught before these units. The unit provides a foundation for unit 8F 'Compounds and mixtures', unit 9E 'Reactions of metals and metal compounds' and unit 9F 'Patterns of reactivity'. The historical impact of ideas about atoms is covered in unit 21 'Scientific discoveries' in the history scheme of work.

Expectations

At the end of this unit in terms of scientific enquiry:

most pupils will: select information about elements and their properties from a range of secondary sources; describe how to deal with hazards when preparing oxides; identify an approach to finding out whether a material is an element or not and explain how their results provide appropriate evidence

some pupils will not have made so much progress and will: find information from selected secondary sources about elements and their properties; describe some hazards in preparing oxides and describe the results of their investigations

some pupils will have progressed further and will: select secondary sources to provide the information needed about elements and their properties; identify limitations of evidence obtained about whether a substance is an element or not, where appropriate, suggesting alternative explanations

In terms of materials and their properties:

most pupils will: recognise that there is a small number of elements and name some of these; explain that compounds are made when atoms of different elements join together; begin to use symbols for elements and to represent reactions in word equations

some pupils will not have made so much progress and will: name some elements and represent these by symbols; distinguish between symbols for elements and formulae for compounds; name a wide variety of materials

some pupils will have progressed further and will: identify elements whose properties do not fit the general pattern of metals and non-metals; begin to represent compounds by formulae

The scheme of work will also set out activities that could be undertaken and the resources that would be needed. You might find this helpful in identifying how you can support the teacher.

There will also be structures on checking and testing what the pupils have learned.

4.3 Working with Teachers

The key point to remember is that you are not a teacher. You are there to support the work of the teacher.

Supervision

• You will be under the supervision of a class teacher - if you need help or advice, don't hesitate to ask.
• Always work in sight of a teacher or other adults.
• If you are not working in a classroom you must ensure you **never** work in a closed room alone with the pupils.

**Confidentiality**

• If a teacher talks to you confidentially about a pupil, the information must **not** be passed on to anyone else.

**Time Commitment**

• Agree in advance with your teacher how much time you will be giving and the date and time of your sessions. You will probably spend between 3 and 4 hours a week in the school.
• If you are unable to make that time it is essential to advise the teacher as soon as possible and always try and make alternative arrangements.

**Undergraduate tasks**

• The teacher decides what tasks the undergraduate undertakes each week. Discuss your area of expertise with the teacher in detail in order to help them identify a suitable task for you. Looking through the programmes of work might help you to identify areas where you feel you can make the greatest contribution.

**Behaviour Management**

• Teachers are responsible for the pupils: morally; legally; and for health, insurance and discipline issues.
• However the undergraduate should ensure that the behaviour of those pupils s/he is working with promotes a good learning environment.
• If you set boundaries for acceptable behaviour with children they must always be **clear**, **consistent**, **firm** and **fair**.

**Liaison with the teacher**

• You will have the opportunity to meet the teacher in advance of beginning tutoring. You should be clear about what you are going to be doing, how this fits in with what the teacher will be doing, what to wear and how to address the teacher in the classroom.
• Arrange to have a chat with the teacher to get some feedback after each session and to discuss likely content of the following week's lesson. Where this is not possible you should at least talk on the telephone. How easily you are able to do this will depend on your individual relationship with the teacher.
• During your normal working hours, teachers are likely to be with classes, so it will be important to set up arrangements for communicating that are mutually convenient. Teachers' working arrangements mean that they cannot be as readily contacted by telephone or e-mail as many undergraduates will be used to.

**Don't hesitate to ask for advice from your unit lecturer if there is a problem.**

**4.4 Working with Pupils**

**4.4.1 Behaviour Case Studies**

During the training day, you will work through some scenarios with your trainer that you may come up against when working with pupils, and some appropriate strategies for dealing with the different circumstances. Examples of such scenarios are:

• Crying child (younger)
• Child injures themselves
• Misbehaving or disruptive child (any age)
• Inappropriate requests (“can you lend me a fag/50p etc.”)
• Information passed to you “in confidence”
• Information about the teacher passed to you “in confidence”

Remember:

• The teacher is always in charge. S/he knows the students, has been fully trained in how to cope and is experienced. You should always alert teachers to any problems as soon as possible and hand over to them.

• If there is a problem in the relationship between you and an individual pupil, you should either talk to the teacher or your unit lecturer for guidance as soon as possible.

• NEVER ALLOW YOURSELF TO BE ALONE WITH ANY PUPILS UNDER ANY CIRCUMSTANCES.

4.4.2 Tutoring Dilemmas

The following “dilemmas” are all based on real experiences of previous student tutors. You are not likely to encounter all of these problems, but it will help you to understand your role better if you can try to envisage what would be the best mode of action when faced with these potentially difficult situations. The scenarios below are deliberately ambiguous in terms of subject, type of school and the gender, age and ability of the pupils. Read through them and decide how you would react trying to place them in the context of different pupil groups (i.e. Primary, Secondary, Sixth Form, Special Needs, etc.). You should try to complete this exercise BEFORE attending the training day and first term tutorials.

Please make sure you have read and understood all our recommended “DON’T” responses.

1. On your first day of tutoring, the teacher, who has not worked with student tutors before, tells you that they would like you to spend all lesson making displays of children’s work. What do you do?

DON’T: Spend the duration of your placement doing nothing except this type of activity.

2. It is your first day in class and you are introducing yourself to a small group of pupils. They start sniggering and whispering to each other. What do you do?

DON’T: Embarrass or intimidate the pupils.

3. You are working with a group of pupils who are completing individual work programs on computer. How do you work with these pupils?

DON’T: Just wander around peering over their shoulders.

4. One of the pupils you are working with is behaving in an over-affectionate way with you. How do you react?
DON'T: Compromise yourself in any way.

5. An important seminar is rescheduled at the last minute and you realise that it clashes with your last intended school visit. What do you do?

DON'T: Forget to sign off from the school properly.

6. You are working with a small group of pupils while the teacher is working with the rest of the class. One girl refuses to do the set task because she says she thinks it is boring. What do you do?

DON'T: Shout at the pupil and try to make an example of her in front of the others.

7. As you are leaving school you see two boys in a serious fight outside the school gates. What do you do?

DON'T: Simply jump in and risk putting yourself in personal danger and/or subsequent prosecution.

8. A pupil you have been working with tells you in confidence that another member of class has been bullying her/him. What do you do?

DON'T: Just ignore the situation and pretend it did not happen.

9. Whilst you are trying to persuade a disaffected pupil to start working, they ask you if you have ever taken drugs. What do you say?

DON'T: Just say “yes”.

10. Please include your own “tutoring dilemma” below together with the action you would take if confronted with the situation. You might like to discuss this with the rest of the group.
DON'T: Leave this blank!

As a responsible adult, you should be able to respond to any difficult situation with CAUTION and COMMON SENSE, but if you are in any doubt about how to deal with a problem during your placement you should speak to the teacher and/or unit lecturer WITHOUT DELAY.

If you have not been able to answer any of the questions above, ask the unit organiser and make sure you have fully understood how to deal with each situation before you start your school placement.

NEVER ALLOW YOURSELF TO BE IN A ROOM WITH PUPILS WITHOUT A TEACHER PRESENT.

4.4.3 Encouraging People to Talk - Questioning and Listening

Questioning is an important part of establishing a rapport with a person. The way questions are asked can open up a rapport or close a relationship down. It is worth considering the kinds of questions that may be asked.

Closed questions and leading questions

Closed questions encourage a yes or no answer, while leading questions seem to anticipate a particular set of responses. Examples of closed questions are: "Did you understand that?"

Closed questions are useful for collecting facts but if too many closed questions are used it tends to close down the relationship and stop the free flow of discussion. Shy people in particular find it hard to respond to questioning. By asking closed questions they are not encouraged to open up and talk freely.

An example of a leading question is: "So, you all understand that now?" The respondents will find it very difficult to answer in any way other than has been indicated so leading questions should be avoided.

Open questions

The questioner wants to find out what the respondent thinks and this kind of question encourages a free response. For example: "Which parts of the module are you finding the most enjoyable?" "Why is that?"

Open questions encourage the student to talk and give their views or experiences.

Testing Questions

Testing questions are asked to test if something has been understood or learned satisfactorily. You may wish to check up if the students have understood something or if they recollect some fact given to them in the past. "Do you remember what that means? Tell me" "Please explain that to me."

Exploring questions

These questions are used to prompt and help develop a train of thought, to encourage reasoning and problem solving, for example: "What do you think that this experiment might show?" "How might this project help a business?"

Listening

Listening is as important as questioning, if not more so. Attentive listening makes the person feel that their ideas and views are important. It helps them feel supported in decision making.
and learning. You should try to start your reply or comments on the basis of what the student has said. Remembering between sessions what individual students have said is important.

**Giving Feedback**

Giving feedback is an important part of working with learners. Feedback should be non-judgemental, honest and consistent. Try to give a feedback sandwich: positive, negative, positive. For example, if a student has given the wrong answer ask why they said that, correct them, giving an explanation as to why they were wrong as well as why the right answer is right. Then provide positive encouragement to the next stage. Leaving students with a negative feeling may cause them to lose interest in the subject or the project.

**Active Listening Techniques**

<table>
<thead>
<tr>
<th>Type of Statement</th>
<th>Aim</th>
<th>Method</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Encouraging</strong></td>
<td>• To convey interest</td>
<td>Don’t agree/disagree</td>
<td>“I see”</td>
</tr>
<tr>
<td></td>
<td>• To keep the person talking</td>
<td>Use noncommittal words with a positive tone of voice</td>
<td>“Uh-huh”</td>
</tr>
<tr>
<td></td>
<td>• To let the person know your grasp of the facts</td>
<td></td>
<td>“That’s interesting”</td>
</tr>
<tr>
<td><strong>Restating</strong></td>
<td>• To show that you are listening and understand</td>
<td>Restate the other’s basic ideas, emphasising the facts</td>
<td>“If I understand, your idea is …”</td>
</tr>
<tr>
<td></td>
<td>• To let the person know your grasp of the facts</td>
<td></td>
<td>“In other words, this is your decision…”</td>
</tr>
<tr>
<td><strong>Reflecting</strong></td>
<td>• To show that you are listening and understand</td>
<td>Restate the other’s basic feelings</td>
<td>“You feel that …”</td>
</tr>
<tr>
<td></td>
<td>• To let others know you understand their feelings</td>
<td></td>
<td>“You were pretty upset by this …”</td>
</tr>
<tr>
<td><strong>Summarising</strong></td>
<td>• To pull important ideas, facts, etc. together</td>
<td>Restate, reflect and summarise major ideas and feelings</td>
<td>“These seem to be the key ideas you have expressed…”</td>
</tr>
<tr>
<td></td>
<td>• To establish a basis for further discussion</td>
<td></td>
<td>“If I understand you, you feel this way about the situation…”</td>
</tr>
</tbody>
</table>

**The Assertive Listener**

**Self-evaluation**

This is a short questionnaire that will help you to assess your strengths and weaknesses so that you can improve your listening skills. Discuss your answers with your trainer or module tutor.

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I give the speaker my complete attention and don’t allow myself to be distracted easily.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. When I’m distracted by my environment, I take assertive action to remove the distraction before asking the speaker to continue.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I keep good eye contact, neither staring nor averting my eyes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I’m responsive through my body language while the speaker is talking (e.g. smiling, nodding).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. When I’m on the telephone, I give my full attention; I don’t secretly do something else at the same time.

6. I don’t constantly interrupt.

7. I don’t finish other people’s sentences.

8. I don’t use every opportunity to turn the conversation on to myself (‘the egocentric listener’)

9. I take notes of complex instructions, of meetings and lectures, rather than relying on my memory, and to assist my concentration.

10. I try not to let my emotions on a topic affect my ability to listen objectively.

11. I try not to make assumptions or jump to conclusions.

12. I often summarise or repeat back what the speaker has said to check that I’ve understood.

13. I ask questions for clarification (e.g. ‘Can you give me an example…?’).

14. If I don’t understand, I say so, and ask the speaker to repeat, to slow down, to speak up, or to spell unfamiliar names as appropriate.

15. I ask open-ended questions (beginning with who, what, how, when, where and why?) to find out more and to encourage the speaker.

16. I am a patient listener.

17. I am an active and assertive listener.

Reproduced from *Training for Assertiveness*, Lucy Seifert, Gower, Aldershot, 1994

### 4.4.4 Questioning Techniques

**Questions to you**

Accept questions at any time to encourage participation

Treat all questions as having equal importance

If you don’t know the answer: don’t bluff, say you’ll find out (ask the teacher and tell them later)

**Questions to others**

Take care not to embarrass anyone who gives a wrong answer

Resolving contradictions can be good learning experiences. Build on individual answers using open and exploring questions

**Questioning a Group**

Use a routine for asking questions e.g. Question – Pause – Name a respondent

Don’t allow calling out

Ensure a random distribution of respondents

Avoid indicating who must answer until everyone has had time to think

**Questions to Avoid**

**Leading:** Compare the likely responses to “isn’t that the best way to do it?” with “is that the best way to do it or can you suggest another?”

**Built in answers:** "5 per cent of 23 is 1.15 isn’t it?"

**Multiple:** "So what's the next stage? What would you do next? What would help you to find the answer?"

**Read my mind:** Do you want to explore other people’s ideas?…… or for them to guess yours?

**Complex:** Match language, etc, to pupil's level. Plan how, why and when to expand vocabulary
Vague: The pupil should know exactly what you are asking

Trick: Think about what purpose a question serves. These types of question are often used to make someone appear foolish

4.4.5 Elements of Body Language

Body language involves giving signals about feelings and content; it’s how the body expresses itself separately from the words themselves. It can indicate anger, fear, nervousness, hurt, joy or love. It can say ‘I respect you and want to get to know you’ or ‘Stay away from me!’ Assertive body language reinforces the message of the words; non-assertive body language confuses the message. Assertive body language is appropriate to the message. For example, a news presenter would look serious when describing a natural disaster. A smiling face could confuse the audience as well as cause offence.

This list is primarily for you to be aware of your own body language and it will help you present yourself to students but it will also help you to “read” the students better.

Body language includes

Accessories**
Presence*
Breathing
Cosmetics
Clothes
Smell
Eye contact
Facial expression
Gestures
Hairstyle
Handshake
Nervous habits
Non-words***
Pacing
Personal space
Physical contact
Posture
Spectacles / contact lenses
Tattoos
The car you drive
The newspaper you carry and/or read
Voice / speech pattern (volume, pitch, fluency)

* ‘Presence’ is the atmosphere around a person and the emotional impression they make. ‘Presence’ can even remain in a room when the person is not. For example, their aggression or nervousness can enter a room before them and remain there after they have gone.

** Accessories include badges, cufflinks, handbag, jewellery and watches.

*** Non-words are superfluous words that add nothing to the meaning and can form a nervous, distracting habit. Examples are ‘you know’ and ‘I mean’.

The body gives out powerful messages. The impact of messages can be approximately 20 per cent word content, 25 per cent vocal (quality, volume, pace and tone of voice) and 55 per cent visual impression. When you walk into a room you can announce your age, sexual orientation, ethnic origin, status, gender, class, mood, sense of humour and level or confidence – all this without speaking one word. However, be aware that body language can be affected by factors such as culture, nationality, tradition, family background, disability and individual mood.
Assertive Body Language
Again, this information is primarily to help you to present yourself to the pupils but it will also help you to "read" them better.

Breathing
Steady. If you’re feeling nervous about handling a situation relax with deep breathing exercises, breathing in through the nose and counting to five, breathing out through the mouth and counting to five. This helps slow down your breathing and can lower your anxiety level.

Clothes and accessories
Clothes should be comfortable, suitable for the climate, environment and occasion. They should be a reflection of you, whilst also acknowledging the people you’re with. You should also check with your school if they have a particular dress code.

Eye contact
Direct without staring or glaring. Look outwardly at others, rather than being constantly involved with looking inwards at yourself. Eye contact helps you listen and concentrate, and the other person feels valued.

Facial expression
Appropriate to the words and the feelings. If angry, look angry and don’t smile; if happy, smile. Relaxed mouth and jaw.

Gestures
Expressive but not distracting. Open-handed. Don’t fidget or engage in distracting habits like nail biting, tapping on the table or putting your hand over your mouth.

Personal space
This includes distance and height. Appropriate to the situation and degree of familiarity. Comfortable distance. Respect the other person’s space.

Posture
Upright but not stiff when sitting or standing. Uncrossed legs when sitting.

Voice and speech pattern
Steady, fluent. At a good level so that you can be heard without being intrusive. Leave appropriate silences; don’t fill gaps or give yourself extra thinking time by using non-words like ‘really’, ‘well’, ‘right’ and ‘you know’. Steady pace of speech, without abrupt acceleration, deceleration or hesitation.

Summary
Assertive body language is appropriate body language; it confirms and enhances what you say instead of confusing your message through inappropriate facial expression or tone of voice. It’s reinforcement, not a distraction. It can also empower you by building an inner sense of self-esteem, which, in turn helps you behave assertively.

(Reproduced from Training for Assertiveness by Lucy Seifert, Gower, Aldershot, 1994)

4.4.6 The Learning Process

Memory
It takes years of learning and practice to develop and acquire the use of memory as a learning tool. A 5-year old’s ability to concentrate and therefore to memorise, is non-expert and their approach appears to be cursory and haphazard. By the age of 11, children have learnt how to structure what needs to be memorised (e.g. categorisation).
Try to get the pupils you work with to remember what you did with them on the previous visit. This will help to reinforce the progress made, and will help the pupils to build on memorising skills.

**Concentration**
Younger children can have impulsive and brief attention spans.

- When dealing with them on a one-to-one basis, start with general chat to find out what their concentration is like
- Tune in to their responses - it is much easier to employ different ways of approaching the task if you know how your pupils are likely to react
- Use a limited time for each activity (don't labour a point if the pupil does not show interest)

**Wholes and Parts**
Children under the age of 6 do not generally recognise a larger whole made up of smaller parts. So don't expect them to get the 'Big Picture' - help them to create it by using the parts they know.

**Instruction Techniques which work**
Use your own positive learning experiences that have worked well for you.

- If the child struggles, judge how soon you need to intervene. Too hasty and it looks as if you do not have confidence in them, but too slow and they will start to get over-anxious
- Try to always use a 'Can do' attitude
- Try to relate the subject to the child's own experience - this way they can understand it better rather than be left with an abstract concept

**Always try to end each session on a positive note**

**4.4.7 Four Ways of Learning**

**1. TRIAL AND ERROR**

**What is it?**
This is probably the simplest form of learning. Learners try to do something and learning takes place when they succeed or fail in their attempt. People who do not have time to train thoroughly often use it. Common phrases used are "Oh you'll soon pick it up" or "You'll learn as you go along".

**Advantages**
Little preparation required
Minimal resources needed

**Disadvantages**
Lots of mistakes made at the outset
Can de-motivate
Feeling of isolation

**How to use trial and error as a learning tool**
Opportunities for practising trial and error learning should be created around practical, realistic activities. The opportunities should be learning events that are structured rather than unstructured, i.e., events that the trainer has carefully planned. An important feature of trial and error is reinforcement either by praising and confirming that the attempt was correct (positive reinforcement) or constructively criticising for making an incorrect attempt (negative reinforcement).
2. BEING TOLD

What is it?
The basis of this way of learning is that the learner receives some information (words, symbols or figures) from the trainer, e.g. the Highway Code when learning to drive. The entire content of what is to be learnt is presented to the learner in a final form: "Sit down and I'll tell you what you need to know" or "Listen carefully, I'll just go over what you have to do".

Advantages
Quick for trainers
Can deliver lots of information to a large number of people
Limits questions and discussion

Disadvantages
Limits independent thought - no improvement in process
Does not encourage interaction between learners
Creates more questions after training

How to use being told as a learning tool
Useful for situations where there is a clear-cut body of knowledge with a minimum amount of ambiguity and where the task does not require the learner to make any independent discovery. How much a learner learns depends upon:

- The amount to be remembered
  If it is only a small amount, the learner can simply be told. A larger amount of information should be presented in written form for reference.

- The complexity of the information.
  With more complex topics, it is usually better to represent the information visually as well as orally.

3. IMITATION

What is it?
In learning imitation, a learner observes somebody performing a task which the learner then attempts to imitate, eg, "Sit next to Nellie, you'll learn a lot from the way she does things" or "Just watch me, I've been doing it for years".

Advantages
Help and advice is always available
Learn from an experienced person
Informal

Disadvantages
Learn bad habits
Limited to individuals and small groups
Time consuming - may lead to resentment from trainer
Personality conflicts

How to use imitation as a learning tool
The 'model' which a learner imitates should be a positive influence on a learner's behaviour by demonstrating the correct way to do something. The method of learning requires careful consideration by the trainer - if it is ill-prepared and unstructured, the learner will be exposed to (and learn) probably as many bad working practices as good ones.
4. THINKING

What is it?
Learning can occur when a learner is encouraged to think about an experience and reflect on it in learning terms. Using such questions as "Why do you think that happened?" and "What would you do if you were to repeat it?" the trainer is able to create a learning event within which complex situations can be thought about and discussed.

Advantages
Lends itself to group discussion and feedback
Retained in memory for longer
Carry out difficult procedures in a controlled environment

Disadvantages
Requires skilled trainer
Can be challenging to some people
Time consuming

How to use thinking as a learning tool
It might be that there is not a simple, clear-cut answer. The learner might be presented with a number of options, each one having some advantages to offer. Learning can take place when the learner has to evaluate the options, draw conclusions, consider consequences and generally 'think through' the situation. The maturity and experience of the learners relative to the thinking required needs to be taken into account. What is a complex and demanding thinking experience for one learner becomes a simple situation all too easily solved for another.

4.4.8 General Guidelines for Good Practice

Make yourself aware of school policies in relation to:

- **Drugs, Health and Safety, Discipline, Equal Opportunities, Child Protection**
  - It is VERY important that you follow these policies AT ALL TIMES
  - In the event of fire stay with the people you are with at the time, find the nearest fire exit

- **Accident/Illness:**
  - Ensure you know ALL pupils’ medical needs and medication (E.g. EpiPen, Inhalers, Tablets etc)
  - At NO time administer ANY medication
  - ALWAYS follow school procedure

- **Special Needs** - These include special educational needs such as Dyslexia

- **Child Protection:**
  - **This is ESSENTIAL:** Make yourself aware of and STRICTLY follow the school policy.
  - Who and where is the Child Protection officer?
  - Under NO circumstances arrange to meet pupils outside the formal sessions
  - familiarise yourself with the school’s Child Protection policy.
  - do not arrange meetings with any pupil from the school outside the school environment.
  - do not have any verbal contact with the pupil by telephone or e-mail.
  - do not give any pupil your personal telephone numbers.
  - In the case of any pupil making a disclosure or where there is cause for concern make sure to follow the school’s Child Protection Procedures rigidly.
- If you have concerns inform the member of staff responsible for child protection immediately
- If you have concerns, do not leave the school building without having passed on your concerns
- Treat all warnings of abuse seriously

● Confidentiality:
   - All students will respect the confidentiality rights of all members of the school community. The only exception to this is with any allegations or suspicions or cause for concern regarding child abuse. Volunteers are expected to make themselves familiar with the individual school’s Child Protection Policy and follow it through rigidly.
   - Names of pupils will not be identified in support group supervision sessions or in any written assessment. Pseudonyms will be chosen and used instead when speaking or writing about pupils.
   - It is inappropriate to discuss individuals or incidents that have occurred whilst mentoring/tutoring unless in a formal, supervised support setting.

● Your Illness: - In the event of illness, the unit lecturer and the school Link Teacher must be informed as soon as possible

● Difficulties: - Do NOT try to resolve ANY major problems alone. Talk to your Link Teacher or unit lecturer if unsure. If in doubt about a situation, terminate the session early. SEEK ADVICE

● Clothing: - Follow the school’s dress code for staff and support staff at all times
4.5 Support Available to an Undergraduate

The full range of support available to you will be different depending on your particular circumstances. The purpose of the form below is to provide you with a personal record of who is available to help you when needed.

**Sources of help for Undergraduates**

**Undergraduate**

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Contact Name(s)</th>
<th>Address</th>
<th>Telephone No</th>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head of Dept</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Link Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>University</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Organiser</td>
<td>Nina Snaith</td>
<td></td>
<td>331 5252</td>
<td><a href="mailto:n.c.snaith@bris.ac.uk">n.c.snaith@bris.ac.uk</a></td>
</tr>
<tr>
<td>Unit Lecturer</td>
<td>Jayne Stansfield</td>
<td></td>
<td>0744 342 2430</td>
<td><a href="mailto:js6027@bristol.ac.uk">js6027@bristol.ac.uk</a></td>
</tr>
<tr>
<td>Student Administration Manager</td>
<td>Kirsten Slater</td>
<td></td>
<td>331-8274</td>
<td><a href="mailto:k.a.slater@bris.ac.uk">k.a.slater@bris.ac.uk</a></td>
</tr>
<tr>
<td>Fellow Mathematics in Schools students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.6 Action Planning Session

Before Christmas, you will need to meet with your assigned teacher to discuss in detail what your role will be in the classroom, what subjects will be covered during the term and what your mutual aims and objectives will be for the term. You should feed the outcomes of this discussion back into your Tutoring Action Plan, or in a separately drawn up list of targets for the term. You will also need to make sure that you have all the relevant information about the school and placement. Some of the factors you need to consider are listed below and on the following page.

Before each lesson you should also aim to create a plan of what you will be doing and what you expect to achieve in that session. Always discuss this with the teacher in advance of the lesson.

Contact details:
- Head Teacher’s name
- Link teacher’s name
- Class teacher’s name
- School address
- Telephone number
- Main school email
- Other useful email address (e.g. teachers)

School day
- Start time
- Lunch
- End
- Break times
- Dates of holidays
- Placement day and time

Basic Action Planning

Travel - Map of School? Parking? Method/Route of travel to school?

Identification of role
Have you talked to the teacher about how they see you working with the class?
If so, what are the major targets and success criteria?
What steps will have to be made to ensure they are achieved?
Who or what is needed to help you get over any barriers to these targets?

Other key issues
Time commitment – this is a 10cp unit and is expected to take around 100 hours of your time.
  You should be aware of how much time this unit is taking you and manage the teacher’s and your own expectations accordingly.
Support of a manager?
Equipment
Notification to parents of off-site trips
Knowledge of what exists already in school in terms of schemes, awards, resources.

Giving Instructions
- Preparation
- Clear aims and objectives
- Concise and easy to follow
- Consider learning preferences
  E.g. visual/auditory/kinaesthetic/sequential/holistic
- Use visual/written examples to aid your presentation
- Check understanding – how?
- Ask for questions
- Be prepared to repeat instructions
- Check understanding
Planning Your Tutoring

- How do I want to be introduced to the learners?
- What do I/the teacher want them to call me?
- What does the teacher expect of me?
- How am I going to learn their names?
- How am I going to encourage them to talk to me and ask questions?
- How am I going to encourage them to listen to me?
- How can I help them/other staff to understand my role in their classroom?
- Where am I going to sit/stand?
- What strategies will I use to help people understand me?
- How will I know when they have understood?
- When am I doing the next visit, and what will I be doing?

Session Planning - Activity Plan Example

<table>
<thead>
<tr>
<th>Date:</th>
<th>5 November 2002</th>
<th>Class/Group:</th>
<th>5b (whole class)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(description and lesson learning context/prior learning)</td>
<td>'Being a Student' talk and poster as a self initiated project. Exercise will build on informal chats in the classroom throughout my placement with the poster as an end focus point to remind the pupils of student life after I have gone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>What do the pupils/learners know already?</strong></td>
<td>Some pupils have asked me questions about university life, but not all have had a chance, so there is little or no awareness of university apart from knowing it’s a place that I come from.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>What do you want the pupils/learners to do?</strong></td>
<td>To listen to my brief talk, ask a few questions/say their ideas and then make posters in groups, showing what they think being a student is like.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>What do you want them to have learnt?</strong> (Key concepts and ideas)</td>
<td>What a university is. An idea of what it is like to be a student. That anyone can go to university.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communication with teaching/other staff:</strong></td>
<td>Arrange with teacher to run the activity on my last visit and go through the content with her, to make sure it is appropriate for the class and seek advice</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>How are you going to do the activity?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Introduction:</strong></td>
<td>Give prepared short talk on being a student and what university is, stressing that all sorts of people go, keeping it simple as the children are 8 years old and for many, this is the 1st impression they will have. I will use pictures to make it more captivating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Main Activity:</strong></td>
<td>After some Q&amp;A’s and prompting of ideas the class have of me, they will work in their usual groups and make a poster of what it’s like to be a student. I will get them to imagine themselves at my age and what they think they would like to do/be as a student. I will give each table some photos that I took as a ‘day in the life’ snapshot of me as a student to help them create a picture/written poster. I will move between groups and chat further about their ideas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summary:</strong></td>
<td>When the class have finished their posters, we will all look at them and get each group to say their favourite thing about the poster/what they have learnt about being a student. I’ll give them all a ‘prize’ and thank them for welcoming me in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Timeframe</strong></td>
<td>5mins</td>
<td>20mins</td>
<td>5 mins</td>
</tr>
<tr>
<td><strong>Resources:</strong></td>
<td>Pictures of university/halls bedroom/union. Photographs of various aspects of my life as a student. Arrange with teacher access to poster materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outcome/End Product:</strong></td>
<td>Posters to display in school. That the pupils have learnt at least 1 thing about being a student/university</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Review of Activity:</strong></td>
<td>I should have been more prepared for a variety of questions. Got feedback from teacher, who praised the level I had chosen to pitch at. Pupils enjoyed the posters and have decided to display them in the school entrance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. THE ASSESSMENT PROCESS

There are four main methods of assessment used in this course:

1) **A log book of activity** (about 1 page per placement day),
   (including one observation logsheet describing the first day of your placement and one special project logsheet with descriptions of planning and delivery of special projects) – 15%
   - marked by unit lecturer

2) **An end of course report** (about 2000-3000 words),
   (including descriptions of planning, delivery and reception of special projects) – 40%
   - marked by unit lecturer and second marker

3) **An oral presentation** given at the end of the course (15 minutes) – 30%
   - marked by unit lecturer and second marker

4) **An end of course report by the teacher** on your overall progress (1 page of rated criteria + short summary) – 15%
   - assessment by the teacher, moderated by the unit organiser

5.1 Log Book

The purpose of the Log Book is to analyse the extent to which you have made a progressive improvement in the learning criteria identified in Section 3.2, the acquisition of key skills and in developing a working understanding of the school environment. It is also a means to help you approach the activities in a structured and systematic manner. It is a record for you to refer back to when you write your final report. It is to be submitted to the unit lecturer at the same time as the written report.

You are entitled to keep your Log Book confidential from the teacher, but it will be assessed by the unit lecturer at the end of the module. You will also need it to help you complete your end of course report.

There are three different log sheets provided below:

- **Weekly Log Sheet** - undergraduates should complete and file one of these after every session.
- **Observation Log Sheet** - for use after the first session with the teacher only.
- **Special Project Log Sheet** - for use after the undergraduate has delivered their Special Project.

You are free to write your own logsheets and do not have to use the templates given below, but the templates serve as a guide to indicate the sort of thing you should be documenting.

**REMEMBER** to back up electronic versions of logsheets. Every year one student loses work through computer problems. Logsheets are an important record of your time in school and can’t be recreated.
EXAMPLE WEEKLY LOGSHEET

Name: ______________________________________

Date: _______________________________________

Unit Code: ___________________________

Action points identified from previous visit *(about 30 words)*

Brief description of your involvement in the school this week *(about 50 words)*

With reference to the Learning Criteria (1 to 5) outlined on page 7-8 of your Handbook, give examples of actions you have taken that demonstrate achievement or progress in each area. Describe the methods or techniques used (with reasoning), along with evidence of success or need for improvement. Continue on a second sheet if required. *(about 150 words per element)*

1) Communication

2) Working with Others

3) Organisation, Reliability and Self-Management

4) Initiative and Creativity

5) Understanding the Educational Needs of Others

6) Use critical self-evaluation to identify three specific improvements you can make in the future:
   i)
   ii)
   iii)
EXAMPLE OBSERVATION LOGSHEET

(For first session only)

Name: ____________________________________

Date: _____________________________________

Unit Code: __________________________

Lesson / tutoring context, Observation method *(about 80 words)*
(shadowing teacher; assisting teacher; watching from rear of class; etc)

Observations *(about 200 words)*
Make sure you include references to specific competence shown by the teacher, using the learning criteria on page 7-8 of your Handbook. (Include examples in which you think the teacher managed a situation particularly well or badly, and how pupils responded to different actions).

Analysis and conclusions *(about 200 words)*
Comment on what you feel you have learned from your observations, with particular reference to Communication Skills and Working with Others.

Identify three specific improvements you think you can transfer to your own tutoring:

1) 
2) 
3)
EXAMPLE SPECIAL PROJECT LOGSHEET

Name: ________________________________
Date: ________________________________
Unit Code: __________________________

Brief description of context for and content of Special Project (about 100 words)

With reference to whichever of the Learning Criteria you feel to be most appropriate from the outline on page 7--8 of your Handbook, describe the methods used in your Special Project, the reasoning behind them, the expected outcomes and the actual outcomes. Use at least three different Learning Criteria and give examples of how well you think these were met by your delivery of the Special Project. Continue on a second sheet if required. (about 150-200 words per element)

1) Communication

2) Working with Others

3) Organisation, Reliability and Self-Management

4) Initiative and Creativity

5) Understanding the Educational Needs of Others

6) Use critical self-evaluation to identify three specific improvements you could make in the future:

i) 

ii) 

iii)
Here is some general advice about filling out the Log Sheets:

- Complete all sections as fully as possible, except on the weekly logsheet where you may wish to identify 3 or so situations to discuss in detail and enter them under the most appropriate heading 1) to 5). Always complete section 6, as this will help you remember what to work on the following week.

- On your first day in school you should spend at least one lesson just observing from the back of the classroom. This should be the basis for your observation logsheet where you critically analyse the teaching techniques used by the teacher, making notes of those which worked, along with why you think they worked, and those which you think could be improved.

- Refer to the examples and tutorial discussions to help you use the right content, style and layout.

- Be selective in what you choose to write about. You are not expected to be able to report everything you do in the classroom, but you are expected to select the experiences that you can write about in a reflective/evaluative way. You will be assessed on quality rather than quantity of contribution and reporting.

- Do not merely describe what you did. Each example of your work should follow the process of what you did, why you did it, and what happened as a result. You should also include suggestions of how you might improve what you did the next time. YOU WILL BE ASSESSED ON HOW COMPLETE AND EFFECTIVE IS YOUR ANALYSIS OF THE CLASSROOM INTERACTIONS YOU DESCRIBE ON THE LOGSHEETS. Don’t forget to describe HOW you communicate (verbal language, body language, questions, demonstrations, repetition, etc), why you choose a given technique and how the student responds to it. Give evidence for general statements such as, “after that the students understood the work” or “I have developed a good working relationship with the students”.

- You should aim to link each situation or example of your work with the specific assessment criteria outlined in the assessment briefing.

- Do not be vague in writing up your evidence. Sing your own praises and don’t be afraid to say ‘I did this’, ‘I did that’. Do not write passively as though anyone could have done what you are writing about.
• The ‘Observation Logsheet’ is intended to give you the opportunity to observe others’ competence against a range of the learning criteria, in order to help you analyse and develop your own competence

**Example logsheet entry:**

**WEEKLY LOGSHEET**

Name: ____________________________________        Date:

________________________________________

Unit Code: ______________________________

**Action points identified from previous visit.** KEEP IT SIMPLE & SPECIFIC (about 30 words)

**Tutoring context & session content** (about 50 words)

With reference to the Learning Criteria (1 to 5) outlined on page 7-8 of your Handbook, give examples of actions you have taken that demonstrate achievement or progress in each area. Describe the methods or techniques used (with reasoning), along with evidence of success or need for improvement. Continue on a second sheet if required. *(about 150 words per element)*

1) **Communication**

Working with a group of six Year 7 pupils I noticed that ‘L’, who has hearing difficulties, had not started the maths activity. I sat down at L’s level, and spoke slowly and clearly, facing him, so he could read my lips (1a). I felt that L might feel inadequate, so I told him how my older sister used to help me with my Maths as I struggled with division until I learnt her way of working them out. He smiled and seemed attentive so I think it was a good decision to start with a personal anecdote instead of offering straight away to help him. I will try using this technique again in similar situations. I asked him if he had understood the activity instructions (1b) and he said yes. Even so, I explained the instructions again in case there were any misunderstandings and completed an example of the sums the class were being asked to complete, explaining the processes as I worked it out (1c). L smiled and I watched him do the next example by himself correctly (1b). During the remainder of the lesson he completed the activity successfully.

2) **Working with Others**

3) **Organisation, Reliability and Self-Management**

4) **Initiative and Creativity**

5) **Understanding the Educational Needs of Others**

Today the class had to imagine themselves in 15 years time. I saw this as an opportunity to ask if they saw themselves at university like me, and, with a small group, told them briefly how I got to university. I then got each of them to explain why they did or didn’t see themselves going, sitting back to let them express themselves and explain to each other their own pros and cons. Two of them said they would go, whilst the others argued it wasn’t for them. I asked why, and as they gave reasons, such as money, I would say ‘that might be true, but in many cases you don’t have to spend as much as you think’. This ensured that their opinion was still of value and I could give accurate information. The students nodded and expressed surprise at the level of student loans available, indicating that this was new information for them. We agreed that we
would all think about university away from the class and I would ask them in 2 weeks if their opinions had changed.

6) Use critical self-evaluation to identify three specific improvements you can make in the future:
   i) I will read up on learning difficulties so that I can recognise problems and make sure I give the most appropriate support.
   ii) I will try and encourage the pupils to express their own ideas more by engaging with their topic of conversation as well as my own.
   iii) I want to talk to Mr. W before the session next week about group work and how I can rotate my time to maintain fairness and the chance to help all class members.

5.2 End of Course Report and Special Project

The written report you present at the end of the module should be about 2000 to 3000 words in length. It is intended to allow you to evaluate critically your own progress and experiences during the unit and to determine whether or not you have achieved the targets you set for yourself at the beginning of the unit. It is also intended to provide evidence for the assessing unit organiser of acquired skills and understanding of working in a professional educational environment. The report should be self-contained. You can use material from the logsheets as evidence, but include a brief description of the scenario; the second marker will not be reading the logsheets. The word limit is not a hard limit. An excellent report that goes over the limit will not have marks deducted. However if a long report is repetitive and not focused then marks may be deducted for going over the limit.

The report should be based around four main elements:
1) Research, preparation and identification of clear targets prior to commencement of unit as well as your success in meeting those targets
2) Evidence of progress and success in acquisition and development of skills (see learning criteria on page 7 and 8)
3) Evidence of success in acquiring understanding of professional environment and educational issues
4) Description of Special Project, including content, methods, reasoning, planning, delivery and reception

The report will be assessed on the quality of the writing (clear; concise; correct grammar), the structure of the writing overall (beginning, middle and end; smooth flow of ideas throughout, not bitty or jumbled up; easy to see what point you're trying to make), content (see the four points above), on how well you present evidence of your progress in each of the learning criteria, and on your description and analysis of your special project. The key is that you critically evaluate your time in school, not just give a description of what you did.
SPECIAL PROJECT: The special project accounts for a third of the mark for the written report. As you are planning the project, before its delivery at the school, think carefully about what you hope to achieve through this activity – both for yourself and, even more importantly, for the pupils. When you have decided what it is you hope to achieve, you must think of a way to collect evidence as to whether you were successful in bringing about this outcome. You should think creatively about this. Chances are you won’t have time at the end of a lesson, for example, to hand out a detailed questionnaire. You might want to document some responses acquired informally from the students during the activity, or (if it is appropriate to your special project activity) meet them again the following week to assess their retention of the material. A sample mark sheet is included on the following page.

Examples of previous Special Projects:

Mark – BSc Physics

Mark chose to do his special project with a class of ‘top set’ Key Stage 3 pupils and two Year 12 pupils. He devised theoretical and practical lessons introducing concepts of energy conservation, mechanics and material properties, which were based on squash balls. The students began by looking at actual quality control tests carried out by the World Squash Federation to ensure that all squash balls passed the ‘bounce’ test. Working in teams, the Key Stage 3 pupils were given squash balls and asked to plan and conduct an experiment to investigate the effect of different temperatures on the rebound height of the balls, showing which ones would pass the bounce test. With his Year 12 pupils, Mark spent a couple of lessons covering the theory of Thermal Physics before moving onto the same practical quality control experiment as the KS3 pupils but asking them to carry out a suitable error analysis, look at what factors caused the change in energy and to calculate the loss of potential energy and the maximum kinetic energy of the ball. With both groups Mark was pleased to have introduced a new way of approaching the subject which both encouraged team work and enabled him to test their understanding of the theory he had taught them in an interesting and practical way.

Laura – BSc Mathematics

As part of her UAS module, Laura chose the subject ‘Verbal Communication of Mathematics’ as her special project. Working with high ability year 9 GCSE pupils and year 7 pupils in a rural grammar school she decided, in conjunction with her host teacher, to try to help engage those pupils who did not participate regularly in class. Using a range of teaching techniques and materials, such as questionnaires, handouts, pair work and small group work, she analysed the circumstances in which pupils felt less or more comfortable, and adapted the teaching environment and her methods accordingly. She also analysed the ways in which pupils
preferred to learn, either through visual, auditory or kinaesthetic means. On the basis of her observations, she presented a series of documents and materials including charts, diagrams and a report to her host teacher in order to share her findings on how to improve participation and verbal communication amongst the mathematics pupils, including comparisons of problems in Yr 7 and Yr 9. Laura is now taking a PGCE course at Canterbury.

**REMEMBER to back up your work:** Every year a student wastes time having to rewrite a report that has been lost due to computer problems. Make a back up after each hour or two of work. Think if you had to do that work all over again, it takes more time than backing up the file!

**Comments on the student’s report:**

| Identification of targets from beginning of module and assessment of whether they were met | /5 |
| Evidence for progress in each of the learning criteria (see guidelines) | /5 |
| English style - correct and easy to read and understand? Quality of exposition - clear, well thought out and well-organised? | /5 |
| Description of Special Project – content, planning | /5 |
| Analysis of Special Project - delivery, reception | /10 |
| Evidence of understanding of professional environment and educational issues | /10 |
| General Remarks | |
5.3 Oral Presentation

The 15 minute presentation will be assessed on both content and delivery, and in both respects the stipulated learning criteria should be kept in consideration. The content of the presentation can be on any subject that relates to your placement and experiences during the module. This includes your Special Project, as long as the presentation provides more depth and information than was included in the written report and allows additional learning criteria to be assessed.

Here are some example topics for the presentation:

1) Your special project
2) Your strengths and weakness and development in the classroom
3) How to enhance the science curriculum for GCSE
4) An examination of one hour in the classroom
5) The role of IT and the Internet in the classroom
6) Motivating underachievers
7) Is mathematics in school irrelevant?
8) Teaching is a demanding and undervalued vocation.

The primary elements on which this presentation should be assessed are:

Delivery:
1) Level of preparation
2) Clarity of delivery
3) Evidence of acquired public speaking/teaching skills
4) Evidence of acquired ability to plan and deliver material for peer-presentation

as well as suitability of content matter. A sample mark sheet is included on the next page.

The presentation will be given in front of your unit lecturer and other undergraduates who have also participated in the course.

Comments on aspects of the student’s talk:

<table>
<thead>
<tr>
<th>Clear presentation of the material?</th>
<th>/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good choice of material to talk about?</td>
<td>/10</td>
</tr>
<tr>
<td>Good rapport with audience?</td>
<td></td>
</tr>
</tbody>
</table>
5.4 Teacher assessment
Your contact teacher will be asked to fill in a form (example given below) based on your time in the school. Some of you may work with several teachers. It is ultimately up to the contact teacher to decide who at the school fills in the form, but if you feel you have built a better rapport with one teacher, you can let the unit lecturer know and we can make a suggestion to the school that that teacher be asked to fill in the assessment. Teacher's marks will be moderated by the unit lecturer and the School of Mathematics in order that they are comparable with the University’s marking standards. An example of the sort of questions asked is below.

<table>
<thead>
<tr>
<th>Good use of visual aids?</th>
<th>/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good pace and kept to the agreed time?</td>
<td>/3</td>
</tr>
<tr>
<td>Appeared relaxed and confident?</td>
<td>/2</td>
</tr>
</tbody>
</table>

Teacher’s Assessment

<table>
<thead>
<tr>
<th>Name of undergraduate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>School:</td>
</tr>
<tr>
<td>Name of teacher:</td>
</tr>
</tbody>
</table>

Please assess the undergraduate’s levels of achievement in the following aspects of performance during his or her placement at your school. Your report comprises 15% of the undergraduate’s assessment for this unit, and so your care and cooperation is most appreciated. Simply circle one number in the scale 1-10 for each attribute. A description of the scale is given below that corresponds to the university’s marking system.

10 Impossible to improve performance
9 Exceptional performance, far exceeding requirements
8 Performing at a very high level, exceeding requirements and with very few improvements possible
7 Performing at a high level in almost every area
6 Good performance overall but requires development in a number of areas
5 Adequate performance but significant work required in some areas
Adequate performance but significant work required in most areas

Inadequate performance overall with some areas of significant concern

Inadequate performance overall with many areas of significant concern

Inadequate performance in every aspect

<table>
<thead>
<tr>
<th>General</th>
<th>1 2 3 4 5 6 7 8 9 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punctuality and Attendance</td>
<td></td>
</tr>
<tr>
<td>Enthusiasm for the subject, and ability to share this enthusiasm.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Communication – Use, style and content of spoken language appropriate for the context.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Communication - Ability to listen effectively and respond perceptively to others' views.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Taking responsibility for completing agreed activities.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Initiative and creativity in solving problems and challenges.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Negotiating targets, balancing own views with needs of others.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Working with and maintaining effective working relationships with teachers and pupils.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation</th>
<th>1 2 3 4 5 6 7 8 9 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity of aims and learning outcomes when preparing work</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Awareness of the age/ability of group, (e.g., approach, types of materials and style).</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Recognition of safety issues.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presentation/discussion</th>
<th>1 2 3 4 5 6 7 8 9 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of presentations: clarity, style, use of visual aids and demonstrations.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Keeping material in context of syllabus.</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Accurate and encouraging when answering questions</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>Attitude: (professional, helpful, supportive and patient)</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

**General Comments:** Please summarise briefly below what the undergraduate did during his or her placement with you and in which areas they were most effective. Please make reference where appropriate to their overall performance, ability to interpret relevant principles into terms and actions appropriate for your pupils, ability to adapt to the requirements of your pupils and familiarity with and knowledge of the relevant elements of their subject.
Are you happy for us to pass your comments on to the undergraduate?  Yes / No

Signed: _______________

Name (please print): ____________________
Date: _______________
5.5 Penalties and reassessment

Penalties for late submission of the report: In accordance with the Faculty’s rules for late submission of assessed coursework, unless a prior agreement for an extension to the deadline has been agreed with the unit organiser, a report submitted up to 24 hours after the agreed submission deadline, will incur a penalty of ten marks out of 100 from the mark the student would have received (e.g. report that is marked at 60% would then become 50% once the penalty is applied). The same would hold for each subsequent 24 hour period, with a mark of zero being assigned once the report is seven days late.

University guidance on plagiarism: The report should be your own writing and reflection. If in any doubt what this means, refer to the “Plagiarism and Collusion” section of the Undergraduate Handbook (available on Blackboard at School of Mathematics|Handbooks) or ask the unit lecturer.

Reassessment: If you fail this unit and are required to resit, reassessment will take place in the August/September Resit and Supplementary exam period and will be 15% logbook, 50% written report and 35% oral presentation. Note that if you have missed a substantial amount of the practical work in schools, there may be no way to reassess this unit other than to take the unit again in full in the next academic year.