The Higher Education Academy Economics Network

The Handbook for Economics Teaching Assistants

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Supporting economics teaching in higher education

The Handbook for Economics Teaching Assistants

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1 Starting to Teach

The purpose of this handbook is to provide Graduate Teaching Assistants with practical information and insight into teaching. It includes some basic tips and suggestions on planning, preparation and delivery of class teaching and assessment particularly aimed at newcomers to the profession. It includes examples of practice from past class teachers, case studies from Economics teaching, and links to further resources.

1.1 Types of Class Teaching

Classes can take a number of forms. In quantitative courses, the class will usually be used to work through problem sets that have been disseminated to students in advance. In qualitative classes the time may be spent discussing key questions, critiquing journal articles and or clarifying and enhancing concepts introduced in the lecture. A few GTAs will support "workshops" rather than classes. In these you may spend much of the time giving students one-to-one or small group support in a context where there might be quite a large group working at computers, or on particular small group assignments.

Whatever the precise context, class time needs to be distinctive from lectures, and should be time in which students are encouraged to develop their own thinking on a subject together with their abilities to present and discuss their ideas. Whatever the particular function of your class, you will want your students to be actively engaged and to participate. The guidelines below are intended to help you accomplish this goal. It is also necessary that you discuss the approach you intend to take with the teacher responsible for the course, and desirable that you also take time to discuss your classes with other graduate teaching assistants.

1.2 Beginnings

The first class with a new group of students is always an exciting time. Both you and the students may feel nervous and shy in the new group. Take the time and effort to make everyone feel welcome and at ease in the class. Establish rapport with the students and develop a positive working environment for all. There are many approaches that GTAs use to do this. Here are some suggestions:

- "I always introduce myself and give the students my contact details and office hours first. I then go on and ask them to introduce themselves to the class, asking for their name, degree and why they chose this course"
- "I tried this last term – I said please introduce yourself to the person next to you. Then I asked each student to introduce their neighbour to the rest of the class"
- "I am lucky, I am teaching a subject close to my research and so I try and tell the students why I love the subject. I ask them what interests them about it and from there explain the syllabus we will be covering"

You may find it useful to have a clear agenda for your first session, to be sure that you remember to:

- Introduce yourself and provide your contact details;
- Encourage students to get familiar with each other;
- Provide an overview of the course, or at least how classes work within the course – including how students need to work with course content and the kinds of skills they may be developing as well;
- Work with the class to agree "ground rules" and ways you will work together (e.g. discuss expectations around weekly workload/reading, punctuality, meeting assessment deadlines, student contribution to discussions etc. If these matters are not discussed early on, it may be difficult to sort out problems that arise later.);
- Ensure some time in the first session is devoted to "real" work – ie: subject specialist work; and
- Set the group up for the coming week (readings, roles, your office hours, their next lecture etc).
- Mention any online resources that support the course.

TOP TIPS

An approach that has worked really well for an Economics GTA, is learning names of her students and addressing them during class while discussing the problem sets, using their first names.

1.3 Handling Nerves

Most public speakers say that they feel most nervous just before they begin to talk and during the first 5 minutes or so, and then things get much easier. During your preparation it is worth considering how you will handle your own anxieties and nerves. What are your symptoms? You need to learn how to hide these symptoms and pretend to be more confident. For example, do your hands shake? Then avoid holding your notes in your hand! Does your mouth go dry? Remember to bring a bottle of water along. Often by finding ways of controlling the symptoms, you will find that you are no longer feeling quite so anxious.

Indeed some of the effects of the extra adrenalin you feel are a good thing and will help you to improve your presentation. However, nerves do need controlling and you may like to consider how to be "kind to yourself," for instance, by using the many active learning techniques described in this handbook. If your mouth goes dry, take a glass of water in the room with you. If you fear that your mind may go blank, make 'user-friendly' notes with key terms and prompts in bold or in different colours. Remember to breathe deeply and slowly if you feel panicky. Know yourself and plan to help yourself when you feel most ill at ease.

Another way to avoid stumbling due to nerves is to prove a brief structure or list of the topics that will be touched on in the class. This gives the class teacher a few minutes to get accustomed to addressing the class before embarking on a detailed explanation while simultaneously guiding the GTA as well.

2 Preparation and Planning

Many new GTAs wonder how there can possibly be enough to say to fill the class period. However, this will be the least of your worries. Your job is facilitating and moderating the class, not doing all the work for the students. New GTAs sometimes tend to over-manage the situation. Remember that the class isn't just a matter of your communication with your students; it's a chance for your students to share and explore ideas, explain their confusions, pool resources and develop their understanding. Your classes might include students from all over the world with a tremendous variety of educational and cultural experiences. It is easy to overlook this potential and the value of student input and to end up trying to carry the whole conversation yourself – which is incredibly exhausting and certainly unnecessary.

2.1 Thinking About Content

You may wish to attend the lectures for the course to help you orientate your class teaching and synchronise your approach with that of the lecturer. Some courses require GTAs to attend lectures. Lecture materials may be available on the course web site or virtual learning environment. Looking at past exam papers can also help you determine the themes and issues that should take a greater priority in your teaching. Some class teachers describe allocating the content of their classes into two planning columns, *'must have'* and *'nice to have'*.

2.2 Structuring Class Activities

Sometimes classes can seem to become unfocussed because different students are interested in different aspects of the topic or problem. As a consequence, students can feel frustrated by what they see as irrelevant comments by others. By having a very clear view of the steps of a useful session the GTA can achieve the balance between over-directing and abandoning responsibility. Moreover, it is important to give students a sense of which arguments/assumptions are of primary importance and which are secondary or minor.

The examples of frameworks below may help structure class activities and discussion/dialogue between you and the students and between the students themselves. Note that you may actively involve the students at any/all points in each structure.

Example 1: A "problem-solving" structure

1. Formulate the problem/define the issue
2. Suggest hypotheses/reasons
3. Review relevant data, and
4. Evaluate alternative solutions, consequences, and implications.

Example 2: Comparing/contrasting different models or theories

1. Outline/describe competing models
2. Compare/contrast the models (e.g. through a matrix device)
3. Conclude on relative merits of the models

Example 3: Analysis and critique of a given theory

1. Review key concepts connected with a particular theoretical position
2. Consider the evidence in support/refutation of the theory
3. Consider the implications of the theory (e.g. for practice, for future theory development)
4. Link theory from this session to the forthcoming session

These are simply examples. You may need to adapt or design a framework that suits your discipline and class topics better. However, keeping a clear sequence or structure in your mind may help you to maintain a clear focus in the discussion and help you to meet your learning outcomes for the class.

In many cases, you may find it helpful to structure the session around an essay or exam question. In some courses, the tutor responsible may well provide guide questions.

For many quantitative classes, the aim is formative: students should go away understanding the theoretical and technical issues raised by a given set of exercises, and therefore able to tackle similar problems which they meet in future. Ideally, before the class students should have done and handed in some pre-set homework, which the class teacher has marked and will use in the class to illustrate those theoretical and technical issues. Different departments have different policies, both in terms of what they expect from students and class teachers. However, class teachers generally agree that classes based on problem sets are much more successful where students are encouraged to do the work each week and to hand it in so the class teacher can get a feel for problems arising before the session.

TOP TIPS

"With respect to the structure of my teaching, I have seen that creating links of each week's work to what has been taught during the previous ones has helped students in using each class as a building block for the next ones."

On some quantitative courses the teacher in charge will provide written solutions to the exercises, to be handed out in class; but on other courses depending on the content of the exercises and the preferences of the teacher in charge solutions (or sketch solutions) may not be available until after classes are finished. There are advantages and disadvantages to both approaches, and the teacher in charge has to decide on the balance of the two in each case. One advantage of not handing out solutions in class is that students are apt to pay more attention to the work done during the session; one advantage of handing them out is that, in very computational exercises, the class teacher can refer to pre-printed algebraic and numerical details of the solution, and hence concentrate on the basic theory and strategy involved. On some courses, students will complete problem sets online in advance of the class. You will then get the results prior to the class and you can use this data to help plan your session.

On some quantitative courses it is possible to cover all the exercises in a homework set, while on other courses there is too much material, and it is necessary for the class teacher to judge – in the light of the student work they have marked and of their overall understanding of the course – which questions and/or which topics to prioritise. Example 4 below is a suggested structure for running a quantitative class.

Example 4

1. Take Register and hand back marked homework (each of which provides a way of matching students' names and faces).
2. When pre-printed solutions are available, it is sometimes appropriate to pass them round at this stage, especially when the problems are very computational, while in other cases it may be better to hand them out at the end of the session.
3. Discuss with the class which selection of questions from the homework should be addressed in class; in some cases the class teacher might have (and insist on) a definite preference, in others it will be more appropriate to go with the students' preferences. It is important to check with the lecturer's intention is for all questions to be discussed in the class and, if a more selective approach is followed, which areas should be emphasized. Also ensure that

your class group is not lagging behind or speeding ahead compared to other class groups and in light of the time available.

4. Check with students whether there is anything else – typically, a difficulty to do with recent lectures – that they would like you to talk about.
5. **If the answer is NO:** work through the chosen questions from the homework, with the emphasis on explaining theory and strategies for future application, not simply on "solving" particular questions.
6. **If the answer is YES:** the class teacher may need to extemporise about the issue which the students are interested in. It may or may not be possible to revert to discussing issues from the homework after such alternative topics.

It is always advisable to start any class by checking with the students that what you are proposing for the session is going to be useful: it does happen (although rarely) that the students will much prefer you to spend time clarifying something that has come up in lectures. Be prepared – to some extent! – to be flexible.

In preparing you should be thinking about two aspects of your role:

- The topic to be discussed.
- The management and facilitation of the class.

2.3 The Topic to be Discussed

Have you done the necessary topic reading and thinking, have you informed yourself of what the students studied in any related lectures and have you thought of some helpful questions to ask and points to make? A course will usually have clear, written course aims and some have more detailed objectives or outcomes. It may then be useful for you to prepare some more specific learning outcomes. A learning outcome\objective is a statement that describes what a student should be able to do or understand after attending the class and completing the associated work assignments. These will clearly inform and help focus your class discussions. Here is an example of a set of learning outcomes from a second year Economics course at the LSE.

Microeconomic Principles

- understand the working and applications of the standard general equilibrium model;
- understand the basic elements of welfare economics;
- know how to apply elementary game theory to microeconomic models of firms;
- be able to make economic application of equilibrium concepts in multistage games;
- understand the basic role of uncertainty and imperfect information in analysing economic incentives.

2.4 Class Management and Facilitation

How are you intending the students to engage with the material, what learning processes do you want to use and how will you ensure all those attending can fully participate? For instance, you may decide on a horse-shoe arrangement of seats, to ensure that a student with a hearing impairment can see each person speaking.

Students give a presentation in the seminar session which is not assessed but which links directly to a question in the final examination. The case study http://www.economicsnetwork.ac.uk/showcase/taylor_presentations.htm shows how it is used in an international trade policy module, but could be adapted for use in any undergraduate economics unit/module.

"Students are divided into groups of 3 to 4. I assign groups randomly each time so that the groups change. Divide the number of students in the class that day by the target group size (3 or 4) and round down. Then count students out to that number, repeating. 1's are in a group, 2's, etc.

Students are given a set of questions to guide their discussion and then turn in a sheet with notes at the end with all of their names. Not all that they discuss will make it onto the write-up sheet, but I have found that turning in notes helps to keep them focused during the discussion." For more details look at http://www.economicsnetwork.ac.uk/showcase/federman_group.htm

"For the purpose of adding structure, I begin each class with an overview of the material to be covered in the class, and where it fits into the course structure. In particular, I outline the key questions that need to be answered. After this introduction, I proceed to work through the problems and discussion questions in turn, making note of associated references that students should consult, identifying the most important passages."

http://www.economicsnetwork.ac.uk/showcase/petropoulou_classes.htm

There are more case studies of classroom practice and student engagement on our site http://www.economicsnetwork.ac.uk/showcase/classroom.htm

2.5 Considering Expectations

Before you can successfully implement a discussion session, you will need to become aware of the implicit set of attitudes and messages you bring into the classroom with you. Equally important are the attitudes and expectations that your students bring with them.

You – Your reactions, your responses to students, the attitudes you project in your actions all suggest to your students the sort of interaction they can expect. The way in which you field students' comments will give the most important clue. No one wants to feel that their remarks will be put down or put off. Students are also sensitive to what they think you REALLY want (e.g. does he want a discussion or a chance to give a mini-lecture on his favourite topic? Does she say she wants disagreement and then gets defensive when someone challenges her?). Your students will try to read you so that they can respond appropriately. Be sensitive to the clues you give them and do your best to create a 'safe' place for open and frank questioning and discussion to take place.

TOP TIPS

"I tried using ground-rules last session and was pleased by the students' reaction. I gave them a list of 5 points, things like 'we will start on time', and I asked them to edit the list in pairs. They added some really interesting things, "no one should dominate the discussion" and "everyone should do the core readings each week". I think it helped us to get off on the right foot."

Your students – It is well worth the time and effort it takes at the beginning of a class, with a new group of students, to find out what they are expecting from you and the class. You could simply ask them and some confident students may respond helpfully. Better still, you could ask the students to write down some brief notes about how they see your role and theirs in the class and what they see as the purpose(s) of the class. This would also provide an opportunity for students to explain privately any special arrangements they may need in order to participate fully. If your students are first years you may even wish to facilitate a discussion about how you will work together. Some GTAs find it useful to draw up class ground-rules.

3 The Skills of the Class Teacher

As a class teacher you will need to hone your personal and communication skills. In particular, your listening skills, questioning skills, ability to give complex and difficult explanations and your ability to end classes effectively. This section includes some advice in these areas.

3.1 Effective Listening

1. Try to keep an open mind and listen to what is actually said.
2. Listen for meaning. For example a student maybe asks you a muddled question about a small detail. Actually, what s/he may be telling you is that s/he is completely lost and doesn't understand this at all – or this student may be dyslexic.
3. Try not to pre-empt what a student is saying, by cutting them off mid-question and giving them an answer to a problem as you see it. As much as possible, let them explain their uncertainties and confusions. According to a reasonable body of the Higher Education research literature, concept development often requires that students first understand how new ideas presented fit in relation to what they already know, and IF the new concept requires them to let go of some previous understanding, this needs to be actively acknowledged (ie: you can't simply overlay a new and contradictory set of ideas before the old ones have been explored and deconstructed).
4. Try to find a workable balance between, on the one hand, thinking ahead in the discussion in order to maintain the flow and focus and, on the other, being overly directive and forcing the discussion along your set path.

3.2 Questioning Skills

There are a number of techniques you can use to encourage students to ask questions and to open up discussion.

The most obvious is to draw on students' questions and comments and to enlarge upon them with your own remarks. What do you do if the subject matter is new and your students are too?

You may want to jot down several statements or questions beforehand and use these as a springboard.

For many quantitative subjects, you may want to plan out a sequence of short questions aimed at helping students work their way through a problem, or grasp a better understanding of a theory or model. A number of class teachers in Economics, Maths, Statistics and Accounting and Finance use this approach. Some will go round the class more or less sequentially, so students know when their "time" to answer is approaching and can prepare. Others take a more random approach, calling on people by name. Yet others ask questions to the group as a whole, and let whoever wishes to respond.

This issue, of whether or not to call on students individually and by name to contribute to the class, is one of the more controversial aspects of questioning. Clearly tutors have different styles and students will have varied expectations. The advantage of addressing individual students is that you can tailor comments and make interventions that are appropriate for specific students. It may be a way of involving a very quiet student who you know has useful contributions to make but finds it difficult to raise them in the class. However, great care should be used when 'spotlighting' students. If some students think that they may be 'picked on' to answer questions it may make them very uncomfortable in the class and less able to think and work out their own position or solution. (This may particularly affect the non-native speakers of English in your class and those with disabilities.) This may also have a knock-on effect on the other students and so the positive atmosphere in the class can be eroded.

If you choose to use a direct questioning approach it is also sensible to think through what you will do when a student cannot answer your question or gives a muddled or an incorrect response. It is likely to fall to the tutor to 'rescue' the situation and in some circumstances to help re-build the confidence of an embarrassed or flustered student. Because of these potential difficulties it is, therefore, suggested that you do not ask individual students to answer your questions so directly until you have established a good rapport with your class and you have got to know your students better.

With more discursive subjects, it is generally preferable to open up discussion with open-ended questions which will get students thinking about relationships, applications, consequences, and contingencies, rather than merely the basic facts. Open questions often begin with words like "how" and "why" rather than "who", "where" and "when", which are more likely to elicit short factual answers and stifle the flow of the discussion. This more closed questioning approach tends to set up a "teacher/student" "question/answer" routine that does not lead into more fruitful discussion of underlying issues. You will want to ask your students the sorts of questions that will draw them out and actively involve them, and you will also want to encourage your students to ask questions of one another. Again, it is for you to decide whether to call on students directly, or leave the discussion and discussant "open". Above all, you must convey to your students that their ideas are welcomed as well as valued.

Very occasionally you may have a student in your class who suffers from more than the normal level of anxiety or shyness when called upon to contribute to the class discussions or to present their work. In some circumstances this may be related to a disability, or to language proficiency. Treat such situations with sensitivity and if appropriate seek specialist guidance.

There are a number of pitfalls in asking questions in class. Here are the four most common ones:

1. Phrasing a question so that your implicit message is, "I know something you don't know and you'll look stupid if you don't guess what's in my head!";
2. Constantly rephrasing student answers to "fit" your answer without actually considering the answer that they have given;

TOP TIPS

"On the introductory workshop we heard about a discussion technique that works well for me. I ask a question, I then ask the students to write down their answer and then compare it with the person sitting next to them. I then ask the question out loud to the group again and I always get someone happy to kick off the discussion."

TOP TIPS

"All too often students come to class unprepared, sometimes without even having read the question. Thus, reading the question before getting into the answer can be very important. One of the greatest skills is to succeed in making relatively unprepared students understand, and take an interest in the questions at hand, without compromising the level of the explanation offered or delaying the progress of the class. "

One class teacher goes round the class each week to check who has attempted that week's problem set. Students only need to hand in two pieces of work per term for tutor marking. However he finds that by doing the round weekly, most students do the exercises in advance most weeks, and will be candid (and generally give convincing explanations) when for some reason they have not been able to do the work.

3. Phrasing a question at a level of abstraction inappropriate for the level of the class – questions are often best when phrased as problems that are meaningful to the students;
4. Not waiting long enough to give students a chance to think.

The issue of comfortable "thinking time" is an often-ignored component of questioning techniques. If you are too eager to impart your views, students will get the message that you're not really interested in their opinions. Most teachers tend not to wait long enough between questions or before answering their own questions because a silent classroom induces too much anxiety for the class teacher. It can be stressful if you pick on a student for an answer and all the group are waiting for a reply (see below). Many students, particularly those with certain disabilities or dyslexia, students who are not confident in speaking in public, or not confident in speaking English, may become unduly flustered in such a situation. Creating a more comfortable space in which to think is likely to induce a better 'quality' of answer and increase the opportunities for all students to contribute effectively.

The above approach is likely to help make your students feel more confident for a number of reasons. First the students have the chance to 'check out' their answers with a peer; secondly, they are required to 'rehearse' and put their thoughts into words; and thirdly the answer gains a form of endorsement from the peer which increases confidence in its value. Once the students have confidence that you will give them time to think their responses through, and you show them that you really do want to hear their views, they will participate more freely in future.

Asking Questions Relating to Work Students Have Not Done

This is clearly a different issue from those noted above, and comes back to issues around agreeing ground rules with students to ensure that they prepare adequately for class. It is important to establish agreed working patterns from the start, and follow them through.

3.3 Clarity of Explanation

TOP TIPS

"I try to think of really good examples to illustrate the main points I want to make. If you can find something current from the papers or the news then you are often onto a winner – I like to bring along the paper and hand it round the group. I thought about asking the group to bring in their own examples too and I might try this next year."

The first piece of advice here is to try not to do too much explaining in class. This may sound a little strange but it is all too easy to be drawn into the trap of giving mini-lectures rather than facilitating learning. However, there are times when your students will look to you to help in clarifying points or linking class discussions and course work with related lectures.

In giving a clear explanation you should start from where your learners are. You may choose to summarise "what we know already" or indeed ask one of the students to do this task for the group. There are four quick tips to help structure your explanation:

1. Structure what you say so that you have a clear beginning, middle and ending;
2. Signpost your explanation to make the structure clear to everybody;
3. Stress key points; and
4. Make links to the learners' interests and current understanding. You can do the latter through the use of thoughtful examples, by drawing comparisons and by using analogy.

3.4 Teaching Diverse Classes

- Give "minority" students equal attention in class, and equal access to advising outside class. Don't overlook capable but less experienced students.
- Give "minority" students equal amounts of helpful and honest criticism. Don't prejudge students' capabilities.
- Revise curricula if necessary to include different kinds of racial and cultural experiences, and to include them in more than just stereotypical ways.
- Ensure that the teaching methods and materials you use are accessible to students with different learning abilities and disabilities
- Monitor classroom dynamics to ensure that "minority" students do not become isolated.
- Vary the structure during the course to appeal to different learning styles and modes of learning.
- Don't call on "minority" students as "spokespersons" for their group, e.g.: "So how do Moslems feel about…?".
- Recognise and acknowledge the history and emotions your students may bring to class.
- Respond to non-academic experiences, such as racial incidents, that may affect classroom atmosphere and performance.

Adapted from "General principles in teaching 'minority students'", in *A Handbook for Teaching Assistants*, University of California Santa Barbara (UCSB)

3.5 Bringing Classes to a Close

Getting the timing of classes right can be a challenge to most teachers. There is inevitably pressure on time, as many classes try to "do" as much as possible in the time available. Finding that time has simply run out is a common experience. With that in mind, it is useful to plan the end of sessions as carefully as planning the beginning, and then to watch the clock so that you can decide when the "end game" needs to start. An obvious element in "ending" that many class teachers include is to summarise the ground that has been covered, key learning points and main issues raised. This can give a sense of "neatness" and closure to sessions.

Another way of looking at the end of a class though is to see it as an opportunity to prompt students to further study. Rarely will a class manage to "complete" the topic under discussion. As such, you may wish to consider ways of using the summing up more as an opportunity to identify any "gaps" or issues that haven't been addressed, key readings which you may be have noted students have not yet read, but probably would benefit from spending time on, and in giving students some pointers as to further work they may engage with. Finally, it is often worth reminding students what will be covered in the next class and prompting them to plan ahead, to make links to the next lecture and class, and ensure that everyone is on track to make the most of the next class in the series.

TOP TIPS

"I find important ending the class with a summary of the key arguments discussed, results found and conclusions drawn."

"wishing them a nice weekend at the end of class, showing that they are cared for"

3.6 If Your First Language Is Not English

Many class teachers in UK universities are post-graduate students who are themselves from overseas. Teaching in a foreign language can be a fantastic way of improving your English.

However it may also present a number of challenges too. Here are a few common sense reminders if this applies to you.

1. Always face your students when you are talking to them so that they can also use your eye contact and body language to fully understand your meaning.
2. In discussion, write down key terms and names when you are referring to them. You can do this on the white board or flipchart as you speak or include them in a brief handout and explicitly refer to them in class.
3. Encourage your students to ask questions.

TOP TIPS

I know my English isn't perfect, so when I met my class I said to them "you need to stop me if I talk too fast or my accent is too strong". We needed to sort out how they could stop me without feeling embarrassed – one of my groups actually wave at me if I lose them!

4. Try to talk slowly and clearly so that students will have every opportunity to understand what you are saying.
5. If your students ask you a question that you don't understand, you can:
   - Ask the student to repeat or rephrase the question;
   - Open up the question for the whole class to think about (e.g. "That's a good question… can someone begin to help us answer it?");
   - Attempt to rephrase the question yourself and answer it when you are sure you understand correctly.

If you experience problems with being understood, your institution may be able to provide voice or pronunciation training: check with your staff development department.

4 Case Study: Targeting the Median Student in Seminars

Alberto Salvo Farré, London School of Economics
First published November 2001

'Microeconomic Principles 2' is a course taken mostly by second-year undergraduate students from the BSc in Economics and BSc in Mathematics and Economics programmes. Students opt between either following this course or taking 'Microeconomic Principles 1', the idea being that both courses cover a similar range of topics yet the former uses mathematics more extensively.

Weekly one-hour classes run alongside lectures during two terms. Students are supposed to attempt preset exercises prior to coming in to class, which are then reviewed in class. The nature of questions is mostly quantitative, not discussion-based.

Despite the greater mathematical requirement, in class I seek to emphasise economic intuition. I try to show how problems that appear difficult at first glance are often quite simple, using elementary techniques such as starting by spending a moment thinking about what the question may actually be after in terms of economic content, drawing a diagram, and planning one's approach to solving a question. I highlight the logic behind the particular sequence of steps I use to solve a problem, comparing them to alternatives.

In my view, overdoing an explanation is better than under-explaining. Some students do get lost through a question and I find that by repeating an argument – albeit introducing a different example or approaching the concept from a different angle – I give them a chance to get back on board. In a more complex solution, for instance, when I notice students are struggling, I step back and remind them of what we are doing and why. For this reason it is crucial to read students' faces, and always invite questions. After working step by step through a problem, I go back to the beginning and summarise the steps and the intuition. Despite the session being short, I attempt to target the median student, not the top one. And I direct the weaker student to my office hour.

I constantly remind students that the challenge is to understand the economics, the mathematics being only a means to an end. I try to teach them how to read a mathematical expression in words, and to convert words into the language of maths. Often times a problem can be solved graphically – the solution can then be replicated algebraically.

Other elements for making teaching a rewarding experience for both teacher and students are worth highlighting, no matter how obvious some of them may seem. Prepare yourself for class, recalling the points where students are likely to struggle and where intuition needs to be emphasised. Make note of where to invite questions. Be on time. In class, read or summarise the question before embarking on its solution. Speak clearly. If using the board, plan your board work (content and layout). Learn students' names and try to kindly draw out the quiet students, asking them questions you think they should be able to answer. Time constraints permitting, go the extra mile when correcting home assignments (a task no teacher enjoys!), providing thoughtful feedback. Be generous in your explanations during office hours, stepping back to more basic concepts if you need to. If students feel you are committed to them, they are more inclined to feel committed to you.

5 Preventing and Resolving Problems

5.1 Common Difficulties in Facilitating Class Discussions

The following are some of the common problems that can occur in classes and some ideas about how to cope with them:

- *The whole group is silent and unresponsive* – ask students to work in pairs to get people talking and energised. Ask "What is going on?". Ask groups of four to discuss what could be done to make the group more lively and involving and then pool suggestions.
- *Individuals are silent and unresponsive* – use open, exploratory questions. Invite individuals in: "I'd like to hear what Clive thinks about this," Use "buzz" groups (pairs or groups of three).
- *Sub-groups start forming with private conversations* – break them up with sub-group tasks. "What is going on?" Self-disclosure: "I find it hard to lead a group where…"
- *The group becomes too deferential towards the tutor* – stay silent, throw questions back, open questions to the whole group. Negotiate decisions about what to do instead of making decisions unilaterally.
- *Discussion goes off the point and becomes irrelevant* – set clear themes or an agenda. Keep a visual summary of the topics discussed for everyone to see. Say: "I'm wondering how this relates to today's topic." Seek agreement on what should and should not be discussed.
- *A distraction occurs (such as two students arriving late)* – establish group ground rules about behaviour such as late arrivals. Give attention to the distraction.
- *Students have not done the preparation* – clarify preparation requirements, making them realistic. Share what preparation has been undertaken at the start of each session. Consider a contract with them in which you run the seminar if they do the preparation but not otherwise.
- *Members do not listen to each other* – point out what is happening. Establish ground rules about behaviour.
- *Students do not answer when you ask a question* – use open questions, leave plenty of time. Use buzz groups. Ask students to write down their answers first and share with a neighbour.
- *Two students are very dominant* – use hand signals, gestures and body language. Support and bring in others. Give the dominant students roles to keep them busy (such as note-taker). Use structures that take away the audience. Think about how you position yourself. If you sit next to them rather than opposite them, it is harder for them to "come in". See if you are giving them too much "non-verbal" encouragement, such as nods, eye contact and positive comments. You may need to break some social rules now and then!
- *Students complain about the seminar and the way you are handling it* – ask for constructive suggestions. Ask students who are being negative to turn their comments into positive suggestions. Ask for written suggestions at the end of the session. Agree to meet a small group afterwards.
- *Students reject the seminar discussion process and demand answers* – explain the function of seminars. Explain the demands of the assessment system. Discuss their anxieties.

- *The group picks on one student in an aggressive way* – establish ground rules. Ask 'What is going on?' Break up the group using structures.
- *Discussion focuses on one corner of the group and the rest stop joining in* – use structures. Point out to the group what is happening. Look at the room layout, how are students positioned and where do you sit? – see if physical re-organisation can make a difference to undesirable group dynamics or can enhance discussion flow.

Adapted from materials produced by Dr Alan Booth (University of Nottingham) and Jean Booth (University of Coventry). *Enhancing Teaching Effectiveness in the Humanities and Social Sciences: participant guide* (1997) UK Universities and Colleges Staff Development Agency, Sheffield, p115–6.

5.2 Suggested DOs and DON'Ts for Running Problem-solving Classes

With thanks to Tony Whelan from the LSE for some of the following. Tony is a highly experienced class teacher who has run classes in Maths, Statistics and OR.

Possible DOs for Running Problem Classes

1. **Provide background:** In some sessions, it may be appropriate to discuss the theory and methods involved in a topic, at a fairly general level, and then to use that discussion as the basis for approaching the issues raised by homework exercises.

> On an elementary statistics course, homework revealed that students had considerable difficulty with one important idea, namely that of an estimator. One successful class session involved spending half the time studying the relevant definitions and properties, with lots of examples of things that were, and that were not, estimators. This clarified the issues involved, and it was then possible to go back to the homework questions and clarify how the basic ideas applied in all of them.

2. **Read and contextualise the question(s):** In most sessions it is fruitful to encourage students to read questions carefully and to absorb the information in the question. In many applied areas this can be motivated by the observation that, in the "real world", real problems require considerable effort and thought to decide what is important about them, and what mathematical approach(es) might be fruitful.
3. **Identify thought processes:** In most sessions it is also fruitful to discuss the thought processes that students need to engage in while approaching how to solve a problem: at each stage, students need to be able to decide, "what should I do next"?

> In an elementary statistics course, there are strategies for calculating probabilities using two results known as Bayes' Formula and the Total Probability Formula. It is often useful, at an appropriate stage, to (re-)display those results, in a different colour from the "solution", to remind students just why the next calculation is the appropriate one to carry out. Similarly, in explaining the Gaussian Elimination method of manipulating matrices, it can be useful to put coloured boxes around the key cells and blocks being used at various stages in the calculations.

4. **Use examples:** It is frequently useful to motivate ideas and techniques by reference to real-world examples.

In an elementary statistics course, students meet the concept of "outliers", that is to say values in a set of data that seem a long way away from the bulk of the known data. In real-world situations, such anomalies can be due to, for instance, instrument errors. The discovery of the famous hole in the ozone layer, over Antarctica, illustrates both the importance and the difficulty of dealing with this problem in "real-world" situations: it was discovered using meteorological balloons, but then the question arose why meteorological satellites observing the same area earlier had not identified it first. It turned out that the computer programmes used to analyse the satellite data had been so written as to reject, as "outlier" instrument errors, true readings which ought to have revealed the ozone hole … but were ignored until it was discovered a different way.

5. **Prepare and structure:** Make sure that classes are well prepared, with a proper structure: some ideas about this can be found just above, and also in the section on '*Preparation and planning*'.
6. **Explain, then summarise:** Be prepared to repeat things, often from slightly different angles, and to summarise the ideas you are trying to get across, e.g. as bullet points.
7. **Observe your audience:** Pay careful attention to whether students appear to be following what is being said: there are all sorts of clues that can help with this, involving body language and facial expressions as well as any explicit questions or interjections that they make.
8. **Encourage participation:** Even when a class teacher is dominating the discussion (which will often be the case in problem-solving classes), s/he should make sure that students are encouraged to yell out if something is unclear, or wrong.
9. **Involve students:** One other technique that helps to involve students, even when a class teacher is dominating the discussion, is from time to time to ask something like "Someone tell me what comes next". This approach can be varied by asking particular students something similar, but whatever detailed approach may be used, teachers need to be aware of the twin dangers of the "pushy" student, who likes to show off how much s/he knows, intimidating or discouraging others, and of the shy or nervous student, who needs to be encouraged to respond in such situations.
10. **Use follow-on exercises to check on understanding:** Students can be told in advance that they will be given an exercise in class as a follow-on from, or as another example of, an exercise they have prepared. They could work on these in small groups with the groups reporting back.
11. **Give students enough time:** If you give students work to do in the class as a follow-on exercise from the ones they have prepared, give them enough time to complete it, or at least to get sufficiently far through it to benefit from the subsequent explanation.

Definite DON'Ts in Running Classes

1. **Read aloud:** Don't just read out, or ask students to read, pre-printed solutions supplied by the teacher in charge.
2. **Skip parts of explanations:** Don't "skip" detailed points of reasoning on the grounds that they are "easy" or "obvious". Maintain a consistent level of depth of explanation and remember that points that are "obvious" to you may not be so to your students.
3. **Rush:** Don't go too fast.
4. **Try to hide errors:** Don't be afraid to acknowledge errors when they happen or to admit that there is something you do not know. If asked a question that you feel you cannot

accurately/adequately address on the spot, then do not waffle or offer a vague explanation. Tell the students you will look into their question and let them know. Make a note of any unresolved questions or queries and make sure you get back to them with a response.

5.3 Dealing with Difficult Students

At some point in your career as a class teacher you may have to deal with a student who causes disruption in the class or who does not meet his/her course-related obligations, such as handing in assignments, attending classes regularly, etc. Although each case will be different, you will need to take some steps. Here are a few tips:

- If a student who is on the class register does not attend the first class/classes, check that your class register is up to date and, if so, contact the student to remind them they should be attending class, informing them of your office hours in case they wish to come and discuss the course/classes they have missed with you. Typically, students will respond to this and start attending more regularly. If such encouragement is ineffective, then alert the student's tutor/other appropriate member of staff about the matter, copying in the student.
- If a student does not submit the required assignments, then contact the student and give them a reminder and, if appropriate, a final deadline for submitting work. Be flexible and understanding if a student is facing some particular personal or academic difficulty, but maintain a level playing field for the whole group. If failure to submit coursework persists, alert the student's tutor and copy the student.
- Familiarise yourselves with the regulations relating to course assessment so as to advise students accordingly.
- If a student causes disruption in class, for example is rude, aggressive to other students, uncooperative etc, then you have to decide whether the level of class disruption is such as to necessitate intervention (asking the student to stop or, in extreme cases, to leave the room), or it is sufficient to speak to the student later, outside class, about the matter. If you ask the student to leave the classroom, then contact the student's tutor and the undergraduate/graduate tutor directly after the class and explain what occurred. Take care not to offend or humiliate any student in front of his peers, even if his/her behaviour is very challenging.
- Different class groups taught by the same GTA may have different atmospheres. Some may be boisterous and loud, while others may be quieter. It is inevitable that the mix of student personalities and that of the class teacher will jointly determine the atmosphere in the classroom. Sometimes a simple solution is to move a student to a different class group, if possible.
- Keep organised e-mail records for students that cause problems so as to be able to provide an accurate account of the problems at a future date if the need arises.
- Students may try to undermine your authority as class teacher if they perceive you as not being very assertive. Different approaches work for different people but deal with problems professionally *as soon as they arise* in order to prevent escalation.
- Take time to understand what is motivating the poor attendance/challenging behaviour of students and take steps to encourage and motivate them.
- Ask for advice if faced with problems that you are unsure how to tackle.

5.4 Getting Feedback

At various points in the year, you will want to assess how well you and your students are doing. Here are some suggestions to help you evaluate your classroom teaching:

Checking Student Progress

- As noted in '*questioning skills*' in the section on '*the skills of the class teacher*', ask questions designed to monitor student understanding. This is an informal way to assess student progress.
- Watch for student reactions to your discussion section. Take notice of body language and eye contact.
- Consider using short quizzes designed to monitor students' understanding of the previous week's material. (The Economics Network has links to many tests and past papers, that you might want to use or adapt. http://www.economicsnetwork.ac.uk/teaching/exams.htm)
- Try out an "instant questionnaire". This is a simple technique of asking three or four "indicative" questions or statements about a particular session, and getting an instant response to them from the students (usually anonymously, on scraps of paper, done at the end of a session). Statements might take the form of "I now feel confident to tackle problems about x", "Today's class was too fast for me", "I really feel I need more help on understanding theory y", etc.

Feedback on your Class Teaching Approach

- Ask students how things are going, over coffee, or when they come to see you in office hours.
- A few weeks into term, ask students to jot down answers to the following: what would you like me to stop doing; continue doing; start doing? (Think of variations on this theme, for example asking them to comment similarly on what they'd like from their fellow students in the class.)
- Using peer observation of teaching sessions can also greatly benefit the reflective class teacher. It can be very useful to agree to observe and be observed by another class teacher reciprocally to help develop teaching skills.
- Invite the teacher responsible for the course to observe your teaching and arrange a feedback session afterwards.
- You may wish to videotape your classes to review your own approach (you would need to consult with your students about this and probably explain that it is for your benefit and therefore ultimately for their benefit!).

TOP TIPS

"I asked if I could sit in on one of the experienced class teacher's classes, before I met my own group, just to see how he did it. I really liked his approach but I knew I wouldn't have the confidence to mimic him – still it gave me an idea of how to break up the time and how to avoid doing all the talking."

6 Further Reading

Below are some suggestions of further reading, first on class teaching, and then on student study support, as well as links to university handbooks (mostly from the USA).

Class Teaching

The first books listed are practical, containing a number of simple 'hints and tips'. Gibbs and Habeshaw contextualise these tips to some extent with ideas about theories of learning.

Gibbs, G and Habeshaw, T (1989) *Preparing to Teach: an introduction to effective teaching in higher education*, Technical & Educational Services Ltd, Bristol, pp 255.

Hubbard, R. (1995) *53 Ways to Ask Questions in Mathematics and Statistics*, Technical and Educational Services Ltd, Bristol, pp 188.

For more on running discursive classes see:

Taylor, Rebecca (2002) "Seminars" in Peter Davies (Ed.) (2002) *The Handbook for Economics Lecturers*: Teaching, Bristol: Economics LTSN. Online at http://www.economicsnetwork.ac.uk/handbook/seminars/

Brookfield, Stephen D and Preskill, Stephen (1999) *Discussion as a way of teaching: tools and techniques for university teachers*, Open University Press, Buckingham, pp 191.

For some detailed guidance on assessment, and in particular essay marking see:

Rowntree, Derek (1987) *Assessing students : how shall we know them?* Kogan Page, London, pp273.

Brown, G; Bull, J and Pendlebury, M. (1997) *Assessing student learning in higher education*, Routledge, London, pp317. In particular Chapter 5, *Assessing Essays*.

Student Support

http://www.leeds.ac.uk/skillscentre/for-students/skills-grid/skillsgrid-index.htm

You may want to encourage students to read things for themselves, for example:

Drew, Sue and Bingham, Rosie (1997) *The student skills guide*, Gower, Aldershot, pp439.

Institutional Handbooks

Colorado State University has a dedicated handbook for Teaching Assistants in Economics: http://www.colostate.edu/Depts/Econ/pdf/tihbkf00.pdf

The following are institutional handbooks for teaching assistants, with some institution-specific detail but with useful general guidance:

1. University of California, San Diego: http://www-ctd.ucsd.edu/resources/tahandbook.pdf

2. University of Georgia: http://www.isd.uga.edu/teaching_assistant/ta-handbook.html

3. North Carolina State University: http://www.fis.ncsu.edu/grad_publicns/ta_rsrcs.htm

4. Cornell University: http://www.clt.cornell.edu/resources/teh/teh.html
5. University of Maryland: http://www.cte.umd.edu/grad-programs/gtarg.pdf
6. Tufts University: http://ase.tufts.edu/cae/
7. Honolulu University teaching tips: http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/teachtip.htm
8. Teaching methods in social sciences: http://ss.uno.edu/SS/homePages/MethodsIndex.html
9. Indiana University http://www.indiana.edu/~teaching/handbook.shtml