Facilitating learning: Teaching and learning methods

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This paper was first written in 2003 as part of a project led by the London Deanery to provide a web-based learning resource to support the educational development of clinical teachers. It was revised by Judy McKimm in 2007 with the introduction of the Deanery's new web-based learning package for clinical teachers. Each of the papers provides a summary and background reading on a core topic in clinical education.

Aims

The aims of this paper are to:

- **Provide ideas of how to make the most of clinical situations when teaching students or trainees**
- **Raise awareness of the advantages and disadvantages of a range of teaching and learning methods in clinical teaching**
- **Enable you to identify aspects of your everyday work which can be used as evidence for CPD**

Learning outcomes

After studying this paper, you will be able to:

- **Identify opportunities for teaching and enabling learning in everyday clinical practice**
- **Apply some of the major theories of learning and teaching from Higher Education and healthcare contexts to your own teaching practice**
- **Utilise a wider range of teaching methods with students and trainees**
- **Develop a reflective approach to teaching and learning which you can utilise in your own continuing professional development**

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- **References, further reading and useful links**

Please note that the references, further reading and useful links for each of the sections are all in this section, grouped under subheadings

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Introduction

This paper has been developed alongside *Teaching and Learning in the clinical context: Theory and practice* and *Integrating teaching and learning into clinical practice*. Between them, the three papers provide a comprehensive overview of teaching and learning in the clinical context.

***Theory and practice* provides an overview of some educational theories, explains how these have impacted on teaching practice and offers ideas for putting theory into practice in the clinical context with a view to creating good situations for learning.**

***Facilitating learning: Teaching and learning methods* focuses on the 'tools of the trade': looking at some of the main teaching and learning methods that clinical teachers might use.**

***Integrating teaching and learning into clinical practice* has been written to follow and extend the theoretical learning in the other two papers. It considers the challenges of teaching in opportunistic settings and looks at ways to integrate teaching commitments and learning activities into typical day-to-day clinical scenarios.**

The changing NHS: what does this mean for teachers and learners?

In the *Theory and Practice* paper you looked at some of key learning theories and how these might be used in clinical teaching. There have been some huge shifts in recent years in the NHS and Higher Education which have changed the cultures of both. Without going into long sociological explanations, it is useful just to think of some of the key changes and look at how these have impacted on the role of and expectations from clinical teachers.

Since the late 1990s, when national initiatives to reform undergraduate and postgraduate medical education were introduced, medical education (which includes clinical training) has gradually placed greater expectations and more responsibilities on clinical teachers. The Department of Health initiative UMCISS (Undergraduate Medical Curriculum Implementation Support Scheme) which supported the reform of all undergraduate curricula in response to *Tomorrow's Doctors* (GMC, 1993) had a huge impact on undergraduate medical education. New teaching and learning methods were introduced into courses such as problem based learning, video teaching and web based learning and the courses themselves became less informal and more structured in terms of design, delivery and evaluation. Courses were expected to clearly define aims and learning outcomes, modes of delivery and assessment and the national agencies responsible for monitoring educational quality, the Quality Assurance Agency (QAA) and for medicine, the GMC, were looking in detail at how education was being provided. See *Evaluating teaching and learning* for more information about educational quality and course evaluation.

The drive for change and improvement was not only limited to undergraduate courses, structured specialist training was introduced into the UK in 1996 and alongside this came some fundamental changes in postgraduate medical education. The duration of specialist courses were defined and curricula were set for each specialty which aimed to ensure that the standards recommended by the Royal Colleges were recognised by the STA (Specialist Training Authority). The 'Calman' changes were concerned with:

C urriculum
A ppraisal
L ength of training
M anagement of training
A ssessment
N ational standards

Such initiatives were also paralleled with changes concerned with modernisation of the NHS as a whole, the emphasis on patient-centred care, (*The NHS Plan: A plan for investment, A plan for reform*, DoH, 2000), at http://www.doh.gov.uk/nhsplan encouraging staff to work together more closely and learn in multiprofessional settings (eg. in *Working Together – Learning Together: A Framework for Lifelong Learning for the NHS*. DoH, 2001), looking at how professions might be

redefined in terms of their skills bases, areas of responsibility and competence (eg in *A Health Service of all the talents: Developing the NHS Workforce. Consultation Document on the Review of Workforce Planning*. DoH, 2001).

One of the changes we are seeing in medical practice is "less reliance on a particular individual's knowledge base or skill but rather on a team approach" ….which includes representatives of all health professions…. "Doctors must be prepared to teach and learn, not only within their own profession, but also across disciplines" (Peyton, 1998). The paper *Multiprofessional learning: making the most of opportunities* looks specifically at how to make the most of opportunities to introduce multiprofessional learning.

Some European Union directives also impact on education and training such as the recommendations on vocational and postgraduate training and specialisation and the European Working Time Directive. Other changes include the impact of introducing technological innovations (particularly information technology, IT) into the workplace and the educational environment. We will look at some of the ways you can use IT and videos in teaching and learning situations later in this paper.

In *The Doctor as Teacher* (1999) the General Medical Council set out their "expectations of those who provide a role model by acting as clinical or educational supervisors to junior colleagues…..(and)..to those who supervise medical students, as they begin to acquire the professional attitudes, skills and knowledge they will need as doctors" (p.1). The GMC noted that teaching skills can be learned and that those who accept special responsibilities for teaching should take steps to ensure that they develop and maintain the skills of a competent teacher. The personal attributes of the doctor with responsibilities for clinical training and supervision are seen to include:

- **an enthusiasm for his/her specialty**
- **a personal commitment to teaching and learning**
- **sensitivity and responsiveness to the educational needs of students and junior doctors**
- **the capacity to promote development of the required professional attitudes and values**
- **an understanding of the principles of education as applied to medicine**
- **an understanding of research method**
- **practical teaching skills**
- **a willingness to develop both as a doctor and as a teacher**
- **a commitment to audit and peer review of his/her teaching**
- **the ability to use formative assessment for the benefit of the student/trainee**
- **the ability to carry out formal appraisal of medical student progress/the performance of the trainee as a practising doctor.**

p. 4, *The Doctor as Teacher,* GMC, 1999

at http://www.gmc-uk.org

The impact of all these changes on clinical teachers is to raise expectations from students/trainees and monitoring/funding organisations, increase accountability and place additional demands on busy clinicians. Let us go on to explore some of the themes and assumptions which underpin some of the reports and recommendations described above and think about how these might impact on clinical teaching.

The learning environment – 'learner centredness'

One of the main themes running throughout the recent changes in HE and the NHS is the shift from a teacher centred approach to a more learner centred approach. This is not just a semantic shift, but involves actually putting the learner's needs at the centre of activities, not always easy in a busy clinical environment with increasing service pressures. However, making a psychological shift to a learner centred approach which involves students and juniors you may have working with you, can actually be helpful because whereas there are opportunities for learning in virtually every activity clinicians carry out, there are not always opportunities for formal teaching events. If clinicians can make the shift in their approach to facilitating learning rather than delivering teaching, then many more opportunities are opened up eg. at the bedside, in the consulting room, in a clinic or operating theatre.

For clinical teachers to be able to seize these opportunities and optimise learning, they need to have the confidence and expertise to ensure that learners actually do learn. Some of this is about understanding the principles of facilitating effective learning and teaching, some of this is about having the practical skills to put the principles into practice and some of this involves putting your own experience into practice.

The paper *Integrating teaching and learning into clinical practice* gives many ideas and specific examples about how learning can be integrated into routine clinical practice, and other papers look at teaching and learning in different clinical settings.

The learning environment – the physical environment

In clinical teaching, there are a wide variety of physical environments in which teaching and learning can occur. Clinical teachers may be required to deliver formal teaching in a lecture theatre or classroom, much of the day-to-day teaching goes on 'at the bedside', in clinics, consulting rooms or in operating theatres and some teachers are involved in developing open learning resources such as e-learning resources which utilise a 'virtual' environment.

Being aware of the resources available to you and to learners can help to enhance teaching and facilitate learning. For more information about how to use learning resources (including the physical learning environment, the impact of room placement, seating arrangements and other factors

which can affect the learning process) see the paper *Using learning resources to enhance teaching and learning*.

The learning environment is also structured by the curriculum and the approaches that have been taken in designing and delivering it. The paper *Curriculum design and development* includes a section on Models of curriculum development which looks at different approaches to curriculum planning such as PBL and the impact that these approaches have on learning.

Lifelong learning

Another theme running through the development of professional education and training is that of lifelong learning. Learners should acquire and utilise skills and attitudes such as study skills and self-motivation throughout their working lives. The idea of lifelong learning implicitly incorporates many other educational philosophies which underpin the changes we are seeing in healthcare education. Lifelong learning essentially means that people should continue to learn throughout their lives, not just their working lives but in all aspects. It also means that individuals should be encouraged and supported in taking responsibility for their own learning and that organisations and teachers should foster the attributes in learners of learning independently and monitoring their own progress. This is a very different way of looking at the teacher-learner relationship than the traditional master-apprentice model which was the norm in medical education in the past.

There is a shift from the 'teacher as expert' role in which more didactic teaching methods were used, to 'teacher as facilitator of learning' in which teachers guide learners towards resources and sources of knowledge just as much as being the sources of knowledge themselves. This is not to demean the teacher's expertise or clinical knowledge however or to say that we do not need to use didactic methods when appropriate, but it acknowledges that medicine incorporates a body of knowledge that is developing and changes rapidly and that it can be just as important to know where to find out something as to know the answer yourself.

The adult learner

The notion of the adult learner is one of the assumptions which underpins many aspects of postgraduate education and training in particular, but which also influences undergraduate education. This shift reflects work carried out by researchers such as Brookfield (1998) who identify specific differences between the way in which adults and children learn.

The main characteristics of adult learning are:

- **the learning is purposeful**
- **participation is voluntary**
- **participation should be active not passive**
- **clear goals and objectives should be set**
- **feedback is required**
- **opportunities for reflection should be provided**

There have been recent challenges to the assumptions that children should be treated differently from adult learners and if you think about school curricula, they embody most of the characteristics listed above. Ramsden (1992) identifies six key principles of effective teaching in Higher Education as follows:

- **teachers should have an interest in the subject and be able to explain it to others**
- **there should be a concern and respect for students and student learning**
- **appropriate assessment and feedback should be provided**
- **there should be clear goals and intellectual challenge**
- **learners should have independence, control an active engagement**
- **teachers should be prepared to learn from students**

Clearly some of these are attributes which belong to individual teachers whereas others also rely on ensuring that the organisational culture, policies and procedures meet the needs of learners.

See *Curriculum design and development,* section on Course design and planning – the broad context for a more detailed discussion and activities relating to meeting the educational needs of learners.

Managing learning in a clinical and vocational context

Above, we have considered some of the general themes and current trends in HE and in healthcare training. Let us now go on to think more specifically about clinical teaching and learning. We tend to assume that medical students and trainees are highly motivated learners, we do not however always question what actually motivates them to learn. Beatty, Gibbs and Morgan (1997) identified a number of 'orientations to learning', which are summarised in the table below. These orientations include the aims and interests of learners, consideration of these can help identify motivating factors in learning and provide ideas for maintaining learner's interests and helping them progress as professionals.

Orientation	Interest	Aim	Concerns
	Intrinsic	**Training**	**Relevance of course to future career**
Vocational			
	Extrinsic	**Qualification**	**Recognition of qualification's worth**
	Intrinsic	**Interest**	**Choosing stimulating teaching sessions**
Academic			
	Extrinsic	**Progression**	**Grades and academic progress**
	Intrinsic	**Self improvement**	**Challenging, interesting material**
Personal			
	Extrinsic	**Proof of**	**Feedback and passing**

		capability	**the course**
	Intrinsic	**Help community**	**Relevance of course to helping community**
Social			
	Extrinsic	**Enjoyment**	**Facilities, sport and social activities**

We have all experienced the medical student whose social orientation sometimes seems like their main reason for being at medical school, helping learners to reorientate themselves is often one of the main functions of personal tutors. See *Educational supervision, personal support and mentoring* for more about the different roles of the teacher in learner support.

The education vs training debate

We tend to use the words 'education' and 'training' somewhat interchangeably, but it is useful to try to distinguish between them. Stenhouse (1975) argued that there were four fundamental processes of education:

- **Training (skills acquisition)**
- **Instruction (information acquisition)**
- **Initiation (socialisation and familiarisation with social norms and values)**
- **Induction (thinking and problem solving)**

This can be a useful way of thinking about education, but in thinking about clinical learning, it is probably more helpful simply to distinguish between education and training.

"Education is a learning process which deals with unknown outcomes, with circumstances which require a complex synthesis of knowledge, skills and experience to solve problems which are often one off problems….education refers its questions and actions to principles and values rather than merely standards and criteria" (Playdon and Goodsman, 1997). In mainstream education, training can be defined as " a learning process with known outcomes, often dealing in repetitive skills and uniform performances which are expressed as standards or criteria." (Playdon & Goodsman, 1997). "The concept of training has application when
(a) there is some specifiable performance that has to be mastered
(b) practice is required for the mastery of it and
(c) little emphasis is placed on the underlying rationale…teaching implies that a rationale is to be grasped behind the skill or body of knowledge" (Playdon, 1999).

Some aspects of medicine fall into the 'training' category such as learning basic clinical skills or procedures, but many more aspects are much more complex than this and deal with ethical or social questions which have no clear answers or parameters. Effective learning in medical education at all

stages includes elements of training set in the context of lifelong education.
If we take this approach, then facilitating learning is much broader than the formal teaching carried out directly by the teacher ie. employing different teaching strategies, it can also include directing the learner towards another source of learning (the world wide web, an e-learning resource, book or journal) or to another colleague, teacher or patient.

'Learning by doing' – becoming a professional

Clinical teaching often involves seeking out opportunities for learners to practise clinical skills ranging from simple procedures to much more complex skills such as breaking bad news, or carrying out an operation. We take for granted that learners need to have experience if they are to progress and become competent professionals. This section looks at some of the principles which underpin these assumptions.

One of the themes which is highly relevant to many vocational situations is to consider how a student or trainee makes the shift from novice to expert and how they become a professional. Schon's (1987) work has been influential in looking at the relationship between professional knowledge and professional competence and the development of the 'reflective practitioner'.

Kolb (1984) was highly influential in describing how learning takes place and helping understanding of the learning process. His 'learning cycle, see the Teachers' toolbox item: *Learning theories* approaches the idea of learning as experiential (learning by doing). In medical education, much of the learning is necessarily experiential, there is a lot of 'learning by doing' as well as 'learning by observation'. Kolb suggests that ideas are not fixed, but are formed and modified through the experiences we have and by our past experience. These concepts underpin prevailing ideas in medical and other professional education and training such as the reflective practitioner and becoming an expert. Providing opportunities for learners to develop these skills through practice, constructive feedback and facilitated reflection is essential.

The paper *facilitating professional attitudes and personal development* looks at how teachers can help to promote and develop the personal development of learners and help to inculcate appropriate professional attitudes.

Competency based learning

Clinical medicine at all levels tends to take a competency-based approach to the 'training' element of the curriculum. The idea of competences can be found in many areas of vocational training, most commonly used in NVQs (National Vocational Qualifications) where trainees are assessed against stated competences and are deemed either 'competent' or 'not yet competent'.

In medicine, the idea of being 'competent' or 'not yet competent' has been developed by the use of clinical log books which are signed off by supervisors once the student has demonstrated competence. In postgraduate training, the skills and procedures expected at each level are clearly defined. Korst (1973) suggests that it is vital to identify those skills with which all students/trainees should show a high degree of competence and others with which only familiarity might be expected (Newble and Cannon, 1990 p 80). Clinical teachers need to decide how 'competence' will be defined and determined, whether a more black and white approach (competent vs not yet competent) is taken or whether there will be expected degrees of competence. For example, there would be widespread agreement that all medical graduates should be able to take blood or interpret an X-ray but there might be different expectations as to exactly what might be expected both from students at different stages of the course and as to the contexts and definitions of such competences.

Principles of competency based approach:

- **Systematic, based on learning outcomes/competencies deemed essential for health workers once working**
- **Provides trainees with high quality learning activities designed to help them master each task, periodic feedback designed to allow trainees to correct performance as they go along**
- **Requires trainees to perform tasks to high level of competency in work like setting**
- **Individual student differences in the mastery of a task are as much to do with the learning environment as the learners themselves**

Rehearsal, feedback and reflective practice

As clinical teachers, it is essential that if we are to promote educational good practice then we should aim to implement the core principles of adult learning, vocational and professional training. This means that clinical teaching should include opportunities for learners to practise and rehearse clinical situations of varying complexity, to provide constructive and timely feedback to learners and to give learners them time and support in reflecting on their practice in order that they can become competent professional practitioners.

If we are to encourage reflection in our students and trainees, then as professional teachers we should ourselves engage in reflective practice. John Smyth, writing about developing 'socially critical educators' in Boud and Miller (1996) suggests that when reflecting on practice, teachers should engage in four actions, linked to four questions:

***Describe*...what do I do?**
This involves describing concrete teaching events, possibly in a journal or reflective diary. Many programmes have learning logs, reflective journals or dairies which are used as part of a reflective approach to teaching and learning. In these you can note down useful ideas, describe some 'critical incidents', complete the activities and exercises and develop a record which can be used as part of your CPD.

***Inform*....what does this mean?**
This takes the description of teaching and starts to analyse it in order to uncover what this means and to identify the pedagogical principles of what it is that you are doing.

***Confront*....how did I come to be like this?**
This stage goes deeper and starts to question some of the assumptions we make as teachers, making critical reflection about the assumptions that underlie teaching methods and classroom practices. A series of guiding questions for this stage might be:

- **"What do my practices say about my assumptions, values and beliefs about teaching?**
- **Where did these ideas come from?**
- **What social practices are expressed in these ideas?**
- **What is it that causes me to maintain my theories?**
- **What views of power do they embody?**
- **Whose interests seem to be served by my practices?**
- **What is that constrains my views of what is possible in teaching?"**

***Reconstruct*....how might I do things differently?**
This stage involves taking an active reflective stance about your own teaching and incorporating 'learning about learning'.

(Smyth, in Boud and Miller (1996) p. 53)

Engaging in this process can be immensely valuable for clinical teachers. We all make unquestioned assumptions about the people we teach, how we teach and the methods we use, where we teach and what the outcomes will be of our teaching. Medical education itself has moved on tremendously over the last ten years through a process of critical evaluation and introduction of principles and practices that were previously unacknowledged in traditional medical education.

By being aware of current practice in education and including ongoing reflection on our teaching in everyday practice, not only can we ensure that medical students and trainees receive the best and most appropriate education for their needs and that they in turn become the competent, caring and effective doctors of the future but we can also get the most out of teaching and gain enjoyment and satisfaction from developing 'tomorrow's doctors'.

Teaching and learning methods:

This section covers some of the more traditional teaching methods which can be used with individuals, small or large groups.

Other related papers consider different aspects:

Using learning resources to enhance teaching and learning **looks at using learning resources more effectively in clinical learning situations**

Specific clinical teaching contexts and offering examples of appropriate methods to achieve effective learning are covered in depth in the following papers:

Using the consultation as a learning opportunity **looks at different aspects of managing the consultation and using it as an opportunity for learning**
Teaching and learning through active observation **looks at active observation and how teachers can utilise the power of asking learners to observe what they do as a mechanism to effect learning**
Teaching and learning in operating theatres **looks at the operating theatre as a context for learning and offers ideas for how learning opportunities can be developed**
Teaching and learning in the community **takes 'Community based education' as its theme and explores different ways of introducing and sustaining learning**
Teaching and learning 'at the bedside' **looks at the 'bedside', the traditional hospital teaching situation, and identifies a number of ways in which teaching and learning can be improved**
Teaching and learning in outpatients settings **takes the outpatient setting as its focus and offers ideas for effecting learning**

Preparing for teaching

As with any activity, teaching will be performed more effectively if you are prepared for it. Whatever type of teaching is going to be carried out, it is useful to think of preparation in two ways.

The first is <u>long term preparation</u> which includes many of the aspects that have been discussed above:

- **Understanding the principles behind student learning and teaching methods**
- **Gaining and using your own experience as a clinician and teacher**
- **Learning practical teaching skills**
- **Developing an appropriate mind set, including building flexibility and responsiveness to different situations**
- **Planning and thinking about the learning environment**
- **Gaining confidence in facilitating learning as well as formal teaching situations**
- **Watching and learning from colleagues**

The second type of preparation is <u>preparing for the specific teaching session</u> itself. This might include aspects such as:

- **choosing your topic - this might be selected for you if you are teaching on a previously developed course, try to find a topic that**

interest you and that you are confident in teaching, you will be more relaxed and your audience will be more engaged

- **research your audience – find out how many learners there will be, what they know, their backgrounds, level, previous learning, what they are going on to next**
- **'brainstorm' or free associate – write down all your ideas about the topic, what you know and then highlight what you think is most appropriate to the audience and the most important ideas/concepts**
- **produce a working title - this will give the session an aim and direction**
- **identify what you are trying to achieve – ie. the learning outcomes. What will the learners be able to do or what will they know or understand as a result of your session?**
- **Set out a broad structure – plan how the ideas fit together, the best sequence and how these might be best learned or delivered, identify any gaps, think about some of the questions learners might ask and how you might address these**
- **Research – read for specific ideas and facts, don't spend too long on this stage**
- **Produce a lesson plan – including any learning resources needed, student activities, produce any handouts etc.**
- **Prepare the learners – is there anything such as pre-reading that you want the learners to do before they come to the session, let them know**
- **Deliver the session**
- **Reflect and think about how it might be improved next time**

Working through the papers in this programme will help you prepare for different teaching and learning situations.

Facilitating the integration of knowledge, skills and attitudes
Medicine is as much an art as a science, and therefore clinical teaching and learning involves a complex synthesis and integration of knowledge, skills and attitudes in the minds of the learners. Bodies of knowledge are usually compartmentalised and packaged into 'units', 'papers' or 'courses' in medical curricula. Although this compartmentalisation is useful in the early stages of learning (for example rote learning about biochemical interactions), at a later stage knowledge, skills and attitudes should all interact and it is useful to translate these into behaviour types that reflect the complex interactions.

The behaviour types can be defined as:
Cognitive behaviour – this "is based on knowledge. It implies knowledge in action and at higher levels requires both the knowledge base and an attitude (or ethic) towards the use of that knowledge

Psychomotor behaviour requires the basic dexterity of a skill coupled with the knowledge of how and when to use the skill.

Interpersonal behaviour implies the ability to work with others, both contributing towards that process and accepting the input of others within the team context."

(Peyton, 1998, p.61).

Michael Eraut (1992) proposed a map of three different kinds of knowledge essential for professional education:

<u>Propositional knowledge</u> – this includes discipline based concepts, generalisations and practice principles which can be applied in professional action and specific propositions about particular cases. This knowledge constitutes the knowledge base crucial to a profession's practice – this is often defined as 'core' knowledge in the undergraduate setting.

<u>Personal knowledge and the interpretation of experience</u> – this form of knowledge is about learners' clarifying personal beliefs, attitudes and assumptions to make it clear what they know for themselves and where they locate themselves according to belief systems. This may include thinking about ethical, social and psychological issues, exploring complementary therapies or other forms of medicine.

<u>Process knowledge</u> – knowing how to conduct the various processes that make up professional action. It includes acquiring information, skilled behaviour, deliberative processes, giving information and controlling one's behaviour.

These are discussed further in the paper *Curriculum design and development*.

There is an assumption that learning from one context (eg. basic science) can be applied to other contexts (eg. a clinical problem). In order for students/trainees to learn effectively, a transfer of learning from different sources (books, teachers, experience, e-learning) must occur, this must be assimilated and only then can it be applied.

Cree (2000) suggests that there are a number of "key characteristics that are involved in transfer of learning…

1. **being an active learner, seeking out knowledge and learning**
2. **being able to reflect on previous experience and knowledge**
3. **being able to see patterns and make relevant connections between different experiences and sources of knowledge**
4. **being open and flexible, able to compare and discriminate critically**
5. **being able to use abstract principles appropriately**
6. **being able to integrate personal knowledge and experience with professional knowledge and experience".**

These characteristics can be encouraged and facilitated in well-designed and delivered clinical teaching and this will help students and trainees to learn more effectively in a clinical context. You will find many examples of how to facilitate the transfer of learning in clinical situations throughout the papers on clinical teaching contexts. As Peyton (1998) notes, "a heavily teacher-centred approach may be most appropriate …when the knowledge base is weak and skills are limited. Later, a more learner-

centred approach can be adopted as experience builds. It is a matter of knowing not just what to teach but when to teach it" (p.14).

Many of us find it easier to teach students facts and skills than we do to facilitate the acquisition of appropriate professional attitudes.

The next sections look at specific teaching methods. These can be used in a variety of settings and situations, clinical and non-clinical. We explore some of the key features of each of the methods and some of their advantages and disadvantages. The list is not exhaustive, many references and ideas for further reading are supplied, but this should give you a starting point and some ideas about practical ways to effect learning.

If you are interested in developing your practical skills, have a look at the Deanery's faculty development pages for some ideas about professional development. This can range from attending a teaching skills workshop, to studying for a Master's degree in medical education to asking a colleague to observe your teaching and give you some structured feedback. No amount of theory can substitute for developing your practical teaching skills in a face-to-face context, hopefully with opportunities for rehearsal and constructive feedback!

Teaching and learning in groups

Many teaching situations involve a group of one size or another and with the introduction in many medical schools of activities such as problem based learning, it has become common to think of didactic teaching as less acceptable and also that didactic teaching is always linked to lectures and seminars. The reality is that sometimes didactic teaching is highly appropriate to the learning situation, didactic teaching can be carried out in a small group context, and lectures and seminars are a valuable part of a teacher's repertoire of teaching methods.

It can be useful to follow Elton's (1977) model in classifying all teaching and learning systems techniques into three broad groups:

- **mass instruction**
- **individualised instruction**
- **group learning**

This classification can be used to indicate the role of the teacher and the types of instructional materials might be useful in each of the contexts.

Class of techniques	Examples	Role of teacher/instructor/trainer
Mass instruction	**Conventional lectures and expository lessons, lab classes, television and radio broadcasts, video, cable television, films**	**Traditional expository role; controller of instruction process**
Individualised instruction	**Directed study (reading books, handouts, discovery learning), open learning, distance learning, programmed learning, mediated self-instruction, computer/web based learning, e-learning; one to one teaching, work shadowing, sitting by Nelly, mentoring**	**Producer/manager of learning resources, tutor and guide**
Group learning	**Tutorials; seminars; group exercises and projects; games and simulations; role play; self help groups; discussions;**	**Organiser and facilitator**

(Ellington and Race, 1993)

We can see here that the teacher may play different sorts of roles, depending on the size of the group and the type of learning that is planned to take place.

Small group teaching is very relevant to adult learners and to clinical situations, partly because students and trainees tend to be attached to firms in small numbers but also because learning in a small group facilitates learning through discussion, active participation, feedback and reflection. There simply isn't the opportunity to attend to individual learners' needs if you are teaching 250 students in a lecture theatre. Having said that, there are ways to motivate and enthuse learners, to encourage participation and to enhance active learning in all types of teaching.

For any teaching event, it will be more successful if learners:

- **have an interest in the content**
- **can relate the content to their own experience**
- **can see how the content has potential for future work or assessments**

And if the teacher:

- **is enthusiastic**
- **has organised the session well**
- **has a feeling for the subject**
- **can conceptualise the topic**
- **has empathy with the learners**
- **understands how people learn**
- **has skills in teaching and managing learning**
- **is alert to context and 'classroom' events**
- **is teaching with his/her preferred style of teaching**

Facilitating learning and setting ground rules

One of the main tasks of the teacher is to establish an appropriate micro-culture within the group, this includes the physical environment, the psychological climate and the interactions between the teacher and the groups and between the individual group members. Sometimes the 'rules' are assumed and problems are rare, in other instances a teacher may find it helpful to establish ground rules. Simple rules, such as listening to the teacher without constant interruptions, switching off mobile phones and treating others' contributions with respect might have to be reinforced when a teacher is meeting a group for the first time.

It is useful to be explicit about your ground rules and state them verbally or on a slide to the learners, giving opportunity for them to respond, add more and negotiate the 'rules'. This provides good role modelling and a transparency about expectations around behaviours.

In specific learning situations, such as when dealing with interpersonal development, communication skills or learning about difficult situations, it can often be helpful to set the ground rules out at the start of the session to help ensure that learners feel safe to express their views and make mistakes and that a congenial atmosphere is developed and maintained. This is very important in many aspects of clinical teaching. We are all aware of the 'teaching by humiliation' that hopefully is now being challenged in medical education today, but clinicians are in an inherent position of power over their students and juniors, often responsible for carrying out assessments and providing references. Awareness of these power relations can help clinical teachers to become more sensitive to the needs of and expectations from learners.

Making the shift we discussed earlier from teacher as expert to facilitator is sometimes seen as diminishing a teacher's power and authority, this should not be the case, facilitating learning is empowering both for the learner and for the teacher and frees the teacher from many of the burdens of having to be an 'expert' might entail. It would have traditionally been seen as a weakness for a teacher to say "I don't know, let's find out" or " I don't know, do any of you students know the answer?" and clearly there are many things that clinical teachers should know more about than their students or trainees, but medical science is changing so rapidly that no-one can know everything. Implementing an evidence-based approach to clinical learning and to medical practice involves finding out about the latest research, you can use these techniques ands this approach to facilitate your own and your students/trainees learning. See the paper *Incorporating evidence based practice in teaching and learning* for more about how to incorporate evidence based practice into teaching and learning.

Explaining

One of the key skills a teacher needs is how to explain, to give understanding to another person. The most important characteristics of explaining are:

- **clarity**
- **interest**
- **logical organisation**
- **relevance to learners**
- **emphasis of important points**
- **appropriate examples**
- **clear diagrams and illustrations**
- **enthusiasm**
- **short sentences**
- **direct speech**
- **appropriate vocabulary**
- **use of statements to ink points**
- **responding to learners**

Learners complain about explanations that are:

- **given too fast**
- **confusing and unclear**
- **disorganised**
- **contain too much information**
- **boring**
- **fail to highlight important points**
- **patronising**
- **too technical**

It is important to introduce the topic clearly, establish rapport with the learners and indicate what is to be explained. In closing, you should draw out the main points of the explanation and not include new pieces of information. The four tactics which help listeners to follow an explanation are:

- **Signposts – these are statements which indicate the structure and direction of an explanation eg. first I will…., second…. and finally…..**

- **Frames – these are statements which indicate the beginning and end of a topic. They are particularly important in complex situations which may involve many levels of explanation. eg. so that ends the discussion on X, let's now look at the role of Y in ….**

- **Foci – these are statements and emphases which highlight the key points of an explanation eg. so the main point is… this is very important….**

- **Links – these are words, phrases or statements which link one part of an explanation with another part. Links are more conspicuous by their absence and often a teacher assumes that learner has made the links themselves about the topic and how it relates to other areas of learning. It is important here to think about the level at which your learners are studying.**

Group dynamics

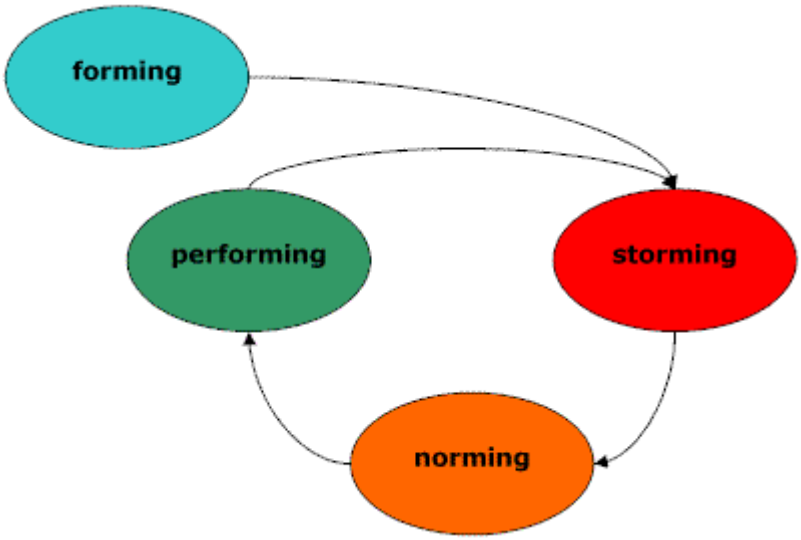
It is vital when dealing with any size or composition of group that the teacher is aware of the ways in groups might interact. Depending on the size of the group, there are certain limitations on the tasks and functions that a particular group might be expected to perform. The table below indicates some of the constraints and positive functions relating to group size.

Size	Task functions	Affective functions
Individuals	Personal reflection Generating personal data	Personal focus increases 'safety' Personal focus means positive start Brings a sense of belonging to and ownership
Pairs/threes	Generating data Checking out data Sharing interpretations Good for basic communication skills practice (eg. listening, questioning, clarifying) Good sizes for co-operative working	Builds sense of safety Builds sense of confidence by active involvement (self belief) Lays foundation for sharing and co-operating in bigger group Reticent members can still take part
Fours/tens	Generating ideas Criticising ideas Usually sufficient numbers to enable allocation of roles and responsibilities, therefore wide range of work can be tackled (eg. project work, PBL, syndicate exercises)	Decreasing safety for reticent members At lower end of the range still difficult for members to 'hide', this risk increases with size Strong can still enthuse the weak Size of group still small enough to avoid splintering Sufficient resources to enable creative support
More than ten	Holding onto a task focus becomes difficult Size hinders discussion but workshop activities possible	Difficulties in maintaining supportive climate 'Hiding' becomes common 'Dominance' temptation and leadership struggles a risk Divisive possibilities with spontaneous splintering into sub-groups

Understanding the way in which the size of a group impacts on function is useful if teachers are planning to break up groups into sub-groups or if they only have a small number of learners with them.

In addition to thinking about the impact a size of a group can have on learning, it is also useful to think about some group processes. There are

many useful books and resources about group dynamics and process and so we will not go into detail here. However, one useful way of thinking about the processes through which a group goes when carrying out a task is Tuckman's (1965) framework:



Source: http://www.infed.org/thinkers/tuckman.htm

- **Forming – this is when a group comes together for the first time. The teacher can help by facilitating introductions, using ice breaking tasks, explaining the tasks and purpose of the group**
- **Norming – here the group begins to share ideas, thought and beliefs and to develop shared norms (group rules). The teacher can help by clarifying ideas and ground rules, encouraging more reticent people to participate and moving the group towards its purpose**
- **Storming – this 3rd stage is when the group is actively trying to carry out a task and there may be conflict between one or more group members. The teacher can help by clarifying and reflecting ideas, smoothing over and moderating conflicts and acting as a go-between between members**
- **Performing – this is when the group focuses on the activity and starts to work together as a team to perform the set tasks. The teacher's role is to keep them focussed and to encourage and facilitate as necessary.**

Managing the group

Understanding a little about the internal dynamics of the group and how to manage different learners will make group working more effective. There are some common problems with communications which can be helped by active facilitation by the teacher.

The persistent talker

- **Monopolising group discussions –summarise their main points and divert the discussion to others; interrupt with a yes/no question and ask someone else to comment; give them a specific task (eg. taking notes, writing on a flipchart) so that they have to listen to others; divide the group into sub groups for specific tasks**
- **Rambling and diverting the discussion – break in and bring the discussion back to the point; be direct; indicate pressure of time and the need to get on with the task; ask questions of other people in the group**
- **Always tries to answer every question – acknowledge their help, suggest you seek out several ideas/answers; direct questions to other people in the group**
- **Talking to others nearby and not joining in with the whole group – directly address them and ask them to contribute to the whole group; stopping talking until they realise others are listening**

Quiet people

- **Shy and timid – they may speak quietly or cannot find the words to say what they mean. You can help them by allowing time for them to respond; asking 'easy' questions of them; asking the same question of different trainees with them safely in the middle; protect them from mockery or teasing; acknowledge their contribution; put the group into pairs on a task to increase confidence**
- **Reticent – often has a valid contribution but are unwilling to participate. You can draw them into the discussion by name; invite them to comment about something you know they have experience of; motivate by focussing on something they find interesting; positively reinforce any contribution**

***Negative attitude* – these people may like to talk but have a negative attitude that can affect others**

- **Superior – they appear to know everything. Flatter a little by indicating how others can learn from their experience; ask for specific examples, ask the group to comment, then ask the person to summarise the rest of the group's points; indicate to the group that they will learn more if everyone shares experience and knowledge**
- **Complainer – blames others and finds fault. Get them to be specific about the problem and invite the group to think of positive solutions; be direct and say that the group has to get on with the task**
- **Clown – ridicules discussion by joking or making irritating remarks. Ask them for a serious contribution; acknowledge any valid**

contribution; be direct and say that although this was amusing, the group must move on to complete its task

- **Arguer – is often aggressive, hostile and antagonistic. Rephrase the point in milder terms; acknowledge that they feel strongly about the issue and invite the group for their comments; avoid lengthy debates by saying you can discuss this after the session; defuse the 'heat' and then move on; as a last resort, ask them to leave the group**

We will now move on to look in depth at some of the formal teaching methods that you might want to use in clinical teaching settings.

Lectures

Giving a Lecture

Lecturing is the most widely used teaching method in higher education. Lectures are used to teach new knowledge and skills, promote reflection and stimulate further work and learning.

Activity

What do you think lectures achieve? What do you think the advantages and disadvantages might be?

Benefits of Lectures

- **Lecturing can be an effective way of providing information which is not available from other sources.**
- **Lectures can be a cost effective means of transmitting factual information to a large audience.**
- **Lectures are useful for providing background information and ideas, basic concepts and methods which can be developed and considered in detail subsequently, either by private study, or in small group activities, supervised by a tutor.**
- **Lectures can be used to highlight similarities and differences between key concepts.**
- **Lectures can be a useful way of demonstrating an analytic process.**
- **Lectures have been found to be as effective as other teaching methods as a means of transmitting information but less effective for promoting thought and changing students' attitudes**

(Bligh D. 1998. *What's the use of lectures?* Intellect: Exeter.)

Disadvantages of Lectures

- **There is no guarantee that effective learning will result from a lecture.**
- **Lecturing is a passive activity. Members of the audience may be busy taking notes but usually have little time or opportunity to reflect on or question the material and clarify misunderstanding.**
- **Lectures are not an effective method for changing attitudes and do not help participants to analyze and synthesize ideas.**
- **Lecturing doesn't always encourage students to move beyond memorization of the information presented and information retention may be poor.**
- **The lecturing method is autocratic in form; it may allow little active audience participation, while at the same time providing little feedback to the speaker as to the effectiveness of presentation.**
- **Lectures cannot cope with a wide diversity of ability.**

How to make your Lecture a success

- **Establish a relationship with your students/trainees**
- **Outline your expectations of them**
- **Schedule opportunities for active learning and for interaction with you or with each other or with the learning materials**

- **Break up a lecture with questions and discussion and use a range of learning activities to promote participation. Don't speak for longer than 20 minutes without some kind of break/activity.**
- **Use audio visual aids to help structure and pace the presentation, emphasise important points and add interest. Don't just read from notes.**
- **Well prepare and rehearse your lecture.**
- **Exhibit enthusiasm and imagination and inspire and motivate your audience to learn.**
- **Use your voice effectively to transmit information and emphasise key points**
- **Help students/trainees to develop ways of structuring their learning and of understanding what is being presented to them.**

For help with preparing Powerpoint presentations and for some useful on-line links on presentation skills see *Using learning resources to enhance teaching and learning.*

Characteristics of a good lecture

- **The lecture enables the student to understand the basic principles of the subject**
- **The lecturer can be heard clearly**
- **The lecture fits coherently into the overall teaching programme**
- **The material covered is relevant**
- **The lecture is organised into a logical structure**
- **The lecture supports and builds on previous learning**

Characteristics of a good lecturer

S/he:

- **presents the material clearly and logically**
- **makes the material intelligibly meaningful**
- **adequately covers the subject matter**
- **is constructive and helpful in his/her criticism**
- **demonstrates an expert knowledge in his/her subject**
- **adopts an appropriate pace during the lecture**
- **includes material not readily accessible in textbooks**
- **is concise**
- **illustrates the practical applications of the theory of the subject**
- **is enthusiastic about the subject**
- **generates curiosity about the teaching material early in the lecture**

Activity

You've been invited to give a lecture to 50 medical students. Identify a subject and then think about how you might define and aim, objectives and outcomes (up to 3) of the lecture.

Preparing to deliver a lecture

- **Go to some lectures**
- **Get used to the room in which you will be delivering the lecture**

- **Allow plenty of lead time for preparation**
- **Obtain a copy of the relevant part of the curriculum to see how the subject of your lecture fits with the overall programme**
- **Speak to those who have delivered teaching before you to find out what students have already been taught**
- **Speak to students to establish their level of previous knowledge**
- **Write down the purpose(s) of the lecture**

What is the purpose of the lecture?

- **Is the main purpose of the lecture to motivate the students so that they appreciate the importance of the subject material in the overall scheme of things?**
- **Or is it to transmit a body of information not readily attainable elsewhere?**
- **Or is it to teach the learner some important concepts and principles?**

If the purpose of the lecture is all three, it should be structured to deal with the purposes sequentially not concurrently and adequate time will need to be allowed for each component.

- **Identify the aims, objectives and learning outcomes of the lecture. See *Curriculum design and development* for more about defining aims, objectives and learning outcomes**
- **Identify the content of the lecture – useful tools are brainstorming and mind mapping (see later in the paper). It doesn't matter at this stage what order you write ideas down. You may at this stage find that you need to read around some of the ideas in order to refine them or to bring yourself up to date. At this stage it is good to write down illustrative examples of key points which come to mind and be on the lookout for any illustrations from which you can prepare slides or other audiovisual aids. This may include appropriate jokes or cartoons.**
- **Structure your lecture carefully and follow a logical sequence, see below for lecture plans.**
-

Example of a lecture plan A (Content oriented model):

1 Introduction and overview

- **Describe the purpose of the lecture**
- **Outline the key areas to be covered**

2 First key point

- **Development of ideas**
- **Use of examples**
- **Restatement of first key point**

3 Second key point

- **Development of ideas**
- **Use of examples**
- **Restatement of first and second points**

4 Third key point

- **Development of ideas**
- **Use of examples**
- **Restatement of first, second and third points**

5 Summary and conclusion

Example of a lecture plan B (using classical content oriented model):

TITLE: Hypertension

1 Introduction: Five key points to be covered (overhead)

- **The nature and extent of the problem**
- **What is hypertension and its causes**
- **What does it do to you**
- **Investigation**
- **Treatment**

2 First key point: The Problem

- **DPB>90 leads to significant morbidity/mortality (slide – actual statistics)**
- **10-25% adult population has hypertension but often undiagnosed or ineffectively treated**
- **Treatment reduces morbidity/mortality (slide – veteran's study from USA)**
- **Implications of screening – diagnosis, cost, education**

3 Second key point: What is Hypertension

- **Multifactorial (slide – various factors)**
- **Essential and secondary**
- **Causes of secondary hypertension (slide)**

Taken from Newble D and Cannon R, 1983. *A Handbook for Medical Teachers* (2nd ed). MTP Press Limited: Lancaster.

Example of a lecture plan C (problem-centred model):

This technique is suited to a lecture in which the purpose is to get students/trainees to learn major concepts and principles rather than to primarily transmit factual information. In this case you would open with a statement of the problem, often presented in the form of a real-life clinical situation or case history. Students/trainees are led through a consideration of a variety of possible solutions. This method is ideal for encouraging student participation.

Example of a lecture plan D (comparative)

This method is used to compare two or more perspectives or methods or models. You should start with an outline of each perspective or model

unless you are sure of the audience starting point. This is best done visually rather than orally.

- **Be careful not to cover too much material in the lecture.**
- **Give signposts or signals to students to help them appreciate direction and links between different subjects and with other teaching events.**
- **Think about how you will deliver the lecture and maintain the attention and interest of learners. See below for tips about how to encourage active learning.**
- **Rehearse to see if you have enough material to cover the length of the lecture and to check your visual aids. You may want to invite a peer or an expert in teaching delivery to observe your rehearsal or the lecture itself and provide feedback.**

Top Tips

Outline your expectations
Give explicit learning objectives
Avoid making rash assumptions about knowledge obtained from previous teaching
Introduce and summarise
Signpost
Don't try to cover too much in your lecture

Activity

Develop a lecture plan for the lecture you have identified in the activity above.

At the beginning of the lecture

- **Decide how you intend to start the lecture beforehand**
- **Describe the structure of the lecture, the aims, objectives and learning objectives/outcomes and subjects to be covered and present it in a visual form, eg overhead transparency or handout**
- **Be sensitive to the students' degree of arousal and their motivation to learn the material – it can be helpful to arrive early and chat with some of the students before the lecture or start the lecture by asking a few pertinent questions in a non-threatening manner and be flexible and change the lecture material if you establish serious deficiencies in knowledge**

During the lecture

- **Give examples of the points made**
- **Explain new concepts in terms of familiar ones by the use of analogies**
- **Make sure you continue to refer back to the lecture outline so that students can review the information already covered, note key points and see how the lecture is progressing. Also provide a summary of the main points covered in each section.**

- **Vary the format of the lecture – give students a break or significantly change the teaching technique and don't carry on for more than 20 minutes without a change. See 'How to encourage active learning' below.**
- **Use appropriate audiovisual aids and make good use of handouts.**
- **Help students to take good lecture notes – you may wish to publish your full lecture notes on your web site to help those who have problems with their notes or want further clarification. You may also want to provide them with the opportunity to check their notes and their understanding with the person sitting next to them.**
- **Don't read from the full text of your lecture, try to just use key points or be guided by the overhead transparencies or slides.**

How to encourage Active learning

Start by asking participants to brainstorm problems which remain unresolved from the previous lecture or raise questions from the previous lecture or reading assignment.

Change the demands made on students every 10 to 15 minutes.

Pause for a few minutes two or three times during an hour lecture to allow students to consolidate notes and develop questions.

Generate discussion

Pause and ask participants to work in pairs to organise their notes and discuss the key points of the lecture. Each group could be asked to develop questions based on what is still unclear which can be addressed at the end of the lecture or at the beginning of the next one.

Give a demonstration, use cases and examples, give illustrations, show a film or videotape segment or use an audio recording.

Use other types of group work similar to those used for *small groups*

Ask students to stop taking notes before the end of the lecture and then ask them to reconstruct on a blank piece of paper, as much of the lecture as possible – either in outline form or diagrammatically. This forces participants to review and consolidate key points and discover points for review.

Encourage participation through:
- **Questions and quizzes**
- **Gapped handouts and diagrams**
- **Data analysis and interpretation**
- **Brainstorms and buzz group**
- **Problems and cases**

Finishing the lecture

- **The conclusion of the lecture is as important as the introduction**
- **Your closing comments should be well prepared as the last things you say are the ones the students are most likely to remember**
- **Reiterate the key points you have made (this can be used at the beginning of the next session to remind participants of what has already been covered)**
- **Direct students to additional reading and further follow-up work for after the lecture but be reasonable in your expectations and given a clear indication of what is essential**
- **Perhaps allow learners a couple of minutes to consolidate and read their notes**
- **Give students an opportunity to interact as soon as possible with the new material, perhaps working individually or in groups during or after the lecture**

Feedback

- **Test students on the subject material at the end of the lecture – it will help students retain their learning**

Activity

Review your lecture plan. Identify one way to encourage greater participation and one way to make the teaching more 'real'

Small group teaching methods and discussion techniques

Activity

How many different types of learning groups or activities can you identify – formal and informal – that you participate in either as 'teacher' or 'learner'?

What are the advantages and disadvantages of small group teaching and of the different types compared to large group teaching, eg lectures?

Types of small group teaching events

Seminars – see below

Tutorials – see below

Workshops are educational seminars or meetings where there is interaction and exchange of information. They are sometimes offered on a residential basis over several days to introduce a course and core topics or at the end to reinforce and integrate learning. They are particularly useful as part of distance learning programmes or to deliver learning where tools and equipment is needed which students do not normally have access to.

Discussion Techniques

There are lots of different techniques for stimulating discussion and interaction. Some of these are described below:

Brainstorming is designed to stimulate creative thinking. Brainstorms are governed by four rules – no criticism, free wheeling welcomed, quantity is important, development of ideas is merited. When the brainstorm is 'complete' the task may continue with evaluation of ideas etc. Rotating brainstorms are a variation where the group divides into three or more. Dimensions of the brainstorm are written on the top of relevant number of flip chart pages. Each group brainstorms onto paper until told to stop – they then 'rotate' their sheets – read the other groups' contributions and then add some more.

Buzz groups: students asked to pair or form small groups to exchange ideas or address a set question or to clarify understandings/identify misunderstandings etc. Buzz groups encourage participation and are particularly helpful when groups are large, if too many people are trying to contribute at once or if shyness is inhibiting several students. A clear task must be set with a time limit and then each group reports back to the whole group. The term 'buzz' comes from the hive of verbal activity.

Case Studies and Problem Based Learning: see sections below

Crossovers is a way of mixing the composition of groups so that ideas in different groups are being shared and disseminated. For example, if you have six small groups of four students each working on Part 1 of a task. You could then ask, for example, the person in the group with the latest birthday to move from one group to the next. You can then ask that person to summarise the thoughts of the group left behind to the new group and then set Part 2 of the task.

Delphi technique: a written method used to agree consensus on issues, but can also be used very successfully to identify dimensions of, or factors contributing to an issue. Students write views on paper (or post-its) and these are either gathered by tutor who synthesizes or clustered for group to consider. A variation is the nominal group where individuals write down their views and then each member of the group reads out one idea in turn that is recorded. If this prompts further ideas students can note them down. Rounds continue until all ideas (or tutor!) exhausted.

Demonstrations/Practicals: see Clinical Skills section in *Using learning resources to enhance teaching and learning*

Fishbowls: divide into inner and outer groups.
Inner group discuss issue/topic, outer group look for themes, patterns, soundness of argument etc

Variations include:
'empty chair' in the inner group which can be briefly occupied by outer group member to ask question / make a comment;
'alter ego' where any outer person can tap an inner person on the shoulder to either take their place or put their point in a different way;
'inner theatre' where inner group have time to prepare a role play/scenario that they act out (without prior briefing to outer group) in the round. Outer group watches and then comments.

Ice-breaking activities: Ice-breaking activities can provide a fun, non-threatening start to group sessions. Examples include asking students to say their name, one thing they hate and one thing they really like.

Line-ups: students asked to adopt a position in a line to represent their view on an issue.

Role play requires students to place themselves in a particular situation or take a committed position on a key issue in the course. It is particularly valuable technique for teaching interpersonal and communication skills, particularly in areas with a high emotional content. It is useful to arrange to sit in on a role play session before trying it yourself. You will need to:

- **Explain the nature and purpose of the exercise**
- **Define the setting and situation**
- **Select students to act out roles**

- **Provide players with a realistic description of the role or even a script. Allow time for them to prepare and, if necessary, practice.**
- **Specify observational tasks for non-players.**
- **Allow sufficient time for the role play.**
- **Discuss and explore the experience with players and observers.**

Simulation and games can be very useful in stimulating discussion or illuminating particular issues. They can also be used to bring together learning from different elements of a course. They do require lots of preparation.

The use of simulated patients is a particularly effective way of teaching interview skills. The use of simulated patients allows interviews to be scheduled at a convenient time and place, all students can be faced with the same situation, the interview can be interrupted and any problems discussed freely in front of the 'patient'. There is also no risk of offending or harming the patient, the student can take as much time as necessary, the same 'patient' can be re-interviewed at a later date and the similar can be trained to provide direct feedback, particularly in the area of doctor-patient relationships. Simulations can be developed for situations which are impossible for students to experience with real patients. This is particularly the case for emotionally charged areas.

Simulation devices can also be used where technology is available, eg for cardiac auscultation, breast examination, prostate palpation, pelvic examination and laryngeal examination. See Clinical Skills section in *Using learning resources to enhance teaching and learning.*

Snowballing and pyramids: a development from buzz groups. Individual task, becomes a pair task where initial ideas are shared. Pairs form fours and begin to look for patterns / trends/points of consensus/disagreement, fours then group into eight and from this develop principles/guidelines or action plans

Seminars and Tutorials

Seminars and tutorials are some of the most traditional models for learning in groups in higher education. The words can be used interchangeably but the main aim of both is to encourage group discussion. Tutors have three roles in managing these types of small group teaching methods – managing the group, managing the learning and managing individuals.

The word 'seminar' is normally used to describe a group discussion led formally or informally by the tutor, focusing on issues arising from subject matter. The number of students is normally between 8 and 20. In the traditional model, one student will be asked to present a critical analysis or other preparation to introduce the discussion. Often seminars are used at postgraduate level providing a forum for presenting research findings to a constructively critical group of academics and peers.

The word 'tutorial' tends to be used for smaller group teaching events where more time is spent with individual students and their development, using certain aspects of subject matter to stimulate debate. In one-to-one tutorials the tutor may look at assignments prepared by the student.

Activity

Think about your experience as either a tutor or learner in a seminar or tutorial. Identify the 'best' and 'worst' aspects of your experience.

If possible, pair up with another person and compare your experience. You could then join another pair and identify shared ideas. This would give you some experience of *snowballing*

Seminars

Benefits

- **Seminars can provide a valuable intellectually stimulating forum for discussion when they are well managed.**
- **They provide an opportunity for students/trainees to ask questions about things they have covered in lectures which they did not understand.**
- **They provide an opportunity for teachers to probe whether students have understood their teaching**
- **Students/trainees can learn from each other's triumphs and disasters.**
- **Students can learn more about what is expected of them and of assessments set.**

Disadvantages

Seminars may result in a mini-lecture. They need to be skilfully managed if they are to achieve the intended outcomes.

Barriers to successful seminars

- **Group dynamics may mean that some group members dominate discussions and there may be difficult dynamics between the student leading the seminar and the tutor.**
- **Class sizes which are too large may prevent everyone from contributing to discussion or inhibit less confident members.**
- **Differences in ability, motivation and confidence may prevent full interaction and involvement.**
- **The physical arrangement of the room in which learning takes place can have a big impact on learning – discussion is difficult if everyone is facing in the same direction or crowded together.**
- **Dirty or cold rooms do not promote an effective learning environment.**
- **Students may be inhibited by their perception of the status and high level of knowledge of the tutor leading the seminar or they may be reluctant to contribute in case it has a negative effect on the grading of their assignments.**
- **The tutor or student may not have prepared properly to lead the seminar.**
- **There may be collusion among students not to criticise a colleague in front of the tutor.**
- **Students may wait for a lead from the tutor.**

Critical success factors

- **Skills of the tutor who must effectively manage the group dynamics and provide sufficient guidance and structure to participants without dominating discussions. Good seminar leaders will be sensitive to any problems and may sometimes withdraw from the room or divide the group into smaller groups to make the learning event more productive and encourage contributions from those who are inhibited by the presence of the tutor or the size of the group.**
- **The success of a seminar will be affected by the ability of students to overcome any difficult group dynamics and anxiety about presenting work or asking questions.**
- **Keep numbers low, preferably less than 10. If the group is too large, spend time in smaller sub-groups. Learning can be more effective in small groups focussing on a particular problem or project.**
- **If a student is leading a seminar they should be given guidance on how to facilitate discussion.**

Preparing for a seminar

- **Identify what the aim and objectives of the seminar are.**
- **Consider your role as a group leader and whether you or your students/trainees will lead the discussion.**
- **Find out as much as possible about the context of learning and what students have already covered before you plan what you are going to do. Sit in on relevant lectures if you can. You can also use this as an opportunity to observe students and where they have got to in their thinking.**

Delivering a seminar

There are no rules about who should lead the seminar. Equally successful seminars can be led by tutors or students and students can gain a great deal from leading a seminar.

Whether you or a student are leading the seminar:

- **Learn the names of those present (use name plates or name badges to help).**
- **Remember that the seminar is supposed to be a discussion.**
- **Outline your expectations of the session and establish ground rules.**
- **Make sure that introductions are kept fairly short and that they include points which will be the basis for discussion and do not just summarise an article or other material. In some cases if a student is leading the seminar, you may have to stop an overlong introduction or contribute to stimulate discussion. It is important that you intervene where necessary and take action before the event becomes a waste of time for the rest of the group.**
- **Material for discussion (pre-set reading or problems) should be distributed for reading in advance of the event.**
- **You should guide rather than lead discussion.**
- **Try to include a variety of activities to try to get all participants involved. See section on small group discussion techniques**

Give a short summary at the end of the seminar and encourage those particularly interested in the topic, or with any difficulties, to get together for further discussion later.

See *Delivering a tutorial* (below) for further guidance

Activity

How could you have improved your last seminar?

What are the aims and objectives of your next seminar? How will you know if you have achieved them? What tasks will you set the students?

Tutorials

Tutorials can be delivered in small groups, on a one-to-one basis or electronically.

Benefits

- **Tutorials can provide a regular opportunity for checking progress of individual student/trainees, identifying areas where they may be having difficulties and giving detailed feedback on assignments.**
- **Tutorials are an effective means by which tutors can carry out their pastoral role. Initially a tutor may help with induction and aspects of career selection. A tutor is also normally the point of contact for a student who experiences academic or personal difficulties.**
- **Tutorials can be effective mutual learning exercises if the group is managed well with the tutor available as a resource.**
- **Academic tutorials can be used in support of a series of lectures providing opportunities for further and more detailed discussion of a topic, clarification, problems, questions, integration of theory and practice, student-led debate and presentations, feedback on understanding.**
- **Tutorials can allow students to develop their skills in developing a hypothesis, solving problems or understanding how to tackle a problem.**
- **One-to-one tutorials allow the teacher to adjust to the individual's needs and abilities.**

Disadvantages

- **Effective group discussions in very small groups often do not need a leader and a tutor's presence may therefore be superfluous one.**
- **The tutor may end up having a dominant role, particularly in one-to-one tutorials.**
- **Feedback may be difficult to gather and it may be unreliable.**
- **Tutorials, particularly one-to-one tutorials, may not be a cost effective use of a tutor's time.**
- **One-to-one tutorials can put tremendous psychological pressure on students and they may not respond in the way you hoped. There are no other students to provide stimulus and if you try to offer them to all of your students/trainees, you may end up having to fit in so many tutorials that there will be long gaps for individual students between tutorials.**

Barriers to successful tutorials

- **Over dominance and over-direction by the tutor.**

Critical success factors

- **Tutorials must have a clear purpose for which both staff and students are prepared.**
- **Tutorials must take place in an environment (real or electronic) in which all participants can easily communicate to exchange ideas and views.**

Delivering a tutorial

A lot of the guidance for delivering a seminar also applies to delivering tutorials.
You will also need to:

- **Set preparatory tasks for participants.**
- **Get a balance between routine activities and more varied activities.**
- **Plan the tutorial carefully and include a review of work completed, assessment of that work, a briefing for the next phase of study and an agreement on further work.**
- **Try to keep groups small enough to enable each individual to contribute to discussion (about five students seems to be the best number).**
- **When asking questions, remember to wait for the answer.**
- **Praise good answers but also preserve the self-esteem of those who give wrong answers.**
- **Prompt and encourage and make sure all are involved.**
- **Create a climate which encourages participants to be bold and imaginative**
- **Establish ground rules for behaviour, promote mutual respect, condemn sarcasm and destructive criticism and agree rules for confidentiality.**

For information on the role of tutors and clinical supervisors see the paper *Educational Supervision, Personal Support and Mentoring*

Clinical tutorials

Clinical tutorials should focus on the solving of patient problems rather than factual information. You will need to plan the teaching, with clear aims and objectives. Ensure that students/trainees know that they will be expected to participate and set tasks for them to perform in preparation for the tutorial. Remember to act as a facilitator and encourage interaction between the participants. You should avoid conducting tutorials in which you or your students/trainees present topics. If, for example, you wish to have a tutorial dealing with hypertension, then a patient with hypertension should be the focus.

Activity

How could you have improved your last tutorial?

What are the aims and objectives of your next seminar? How will you know if you have achieved them? What tasks will you set the students?

Delivering seminars, tutorials and other small group teaching events

- **It is important to plan the learning experience as a structured event to meet the intended learning objectives.**
- **Prepare students to work in small groups, teaching them about how groups work and how to react to conflict.**

- **Some tutors agree a learning contract with their students (either individually or as a group) which includes agreeing learning objectives and assessment procedures and criteria, allocating tasks and developing group rules.**
- **If you have a choice about rooms, avoid using your own room or a formal meeting room**
- **Set up seating arrangements to enhance participation and interaction and play down the authority of the tutor. For example:**
    - **Nervous students can be encouraged to participate more readily if their place in the group is opposite either a sympathetic tutor or an encouraging peer**
    - **A dominating student can be quietened by being seated immediately next to the tutor**

See separate section above for information on small group discussion techniques, including role play, brainstorming, buzz groups etc.

Activity

Write down three changes which you will make to the way in which you manage and deliver small group teaching as a result of reading this section of the paper.

Computer based teaching and learning – information technology and the World Wide Web

Context

The use of Information Technology (IT) and the World Wide Web (WWW) as a teaching tool and rich source of information is increasing rapidly. IT-based teaching and learning can include some or all of the following:

- **using Powerpoint slides in the delivery of a lecture**
  For further information on using Powerpoint to produce visual material for teaching see Using Powerpoint in Lectures in the paper *Using learning resources to enhance teaching and learning*
- **using intranets to replicate course materials online or replace printed materials (eg curriculum information, timetables, learning logs) and for other educational programme tools, eg assessment, course evaluation, on-line support, staff contact details and student management tools (eg tracking, records, statistics). These types of intranets can also include links to internal and external sites and facilities and information on clubs/societies, how to get help, social and sporting events etc.**
- **using computers to mark assessments**
- **using a wide variety of IT-based information sources for clinical teaching and learning including the results of patient examinations, medical images, diagnostic procedures, results from laboratory tests, Trust protocols etc**
- **accessing articles and other resources and photographs on the Internet including database information (whether statistical, bibliographic, full-text, multimedia)**
- **producing and using interactive course materials with activities to be carried out online and animations and simulations to support distance learning and open learning**
- **using Email, online discussion forums and bulletin boards for on-line communications**
- **accessing videoconferencing and live lectures via videostreaming on the Internet**
- **using the WWW in learning and teaching**

Benefits:

- **IT provides access to expert knowledge and rich sources of information originating from around the world.**
- **IT offers ability to link resources in different formats: text, images, sound and video.**
- **Material is easy to update.**
- **IT provides an interactive learning environment independent of time and place with immediate and content related feedback which provides possibilities for self-assessment and reflection.**
- **IT provides a learning tool which offers a more flexible pace of learning and encourages independent and active learning.**
- **IT can use learners' responses to identify areas where further study is necessary and can prevent learners from moving to new material until they have mastered previous material.**
- **IT makes it possible to combine testing, feedback, repetition and diagnosis.**

- **Web-based learning materials can include hyperlinks to other useful sites and web pages and can provide additional learning materials to complement the taught programme or self assessment, eg access to anatomical sites and image banks for Pathology.**
- **IT can support clinical learning when students/trainees are geographically dispersed.**
- **IT provides opportunities for linking organizations around the world and for sharing resources.**
- **IT supports inexpensive, rapid, and reliable global communication.**
- **IT can result in cost savings from reduced printing and distributing of materials, use of teaching rooms and other resources and reduced duplication of teaching.**
- **Computers can help to process information and provide powerful analytical tools**
- **Linking computers together via a local network simplifies the management of computer-based learning and introduces the possibility of computer-based communication within an institution.**
- **Linking local networks via the Internet allows institutions to collaborate worldwide and exchange teaching materials and ideas.**
- **The skills that students acquire in computer based learning provide them with capabilities for life-long professional education.**
- **IT can speed up communications and assignments can be returned faster.**
- **IT facilitates evidence-based medicine and evidence health policy which requires access to and use of relevant and on-line scientific information for sound clinical decision making.**

Barriers to the successful use of IT-based teaching and learning

- **The technology and supporting infrastructure can be very costly.**
- **Developing IT-based resources can be very time-consuming and expensive.**
- **IT-based resources may not achieve educational benefits which are sought and can be very variable in quality and accuracy.**
- **Pre-programmed computer-based learning can be lacking in flexibility resulting in frustration of learners who have provided legitimate but unexpected responses which are not 'recognised' by the computer. It is not a medium which lends itself to subject matter where there is ambiguity or no 'correct' answers or procedures.**
- **Students can get swamped with sheer volume of resources and they need to learn how to use them and self structure their own programme of learning.**
- **Information overload can detract from student learning.**
- **It may take more time to cover the same material in on-line classes than in face-to-face classes.**
- **New technology involves cultural change and adoption of new ways of working.**
- **There is a requirement for access to the appropriate technology. Students/trainees may feel disadvantaged by not having the most up-to-date equipment.**
- **Problems with the technology itself, eg slow downloads and difficulties getting onto the WWW, can be very frustrating.**

- **Students can feel isolated and IT-based teaching and learning cannot totally replace 'face-to-face' contact.**
- **Students/trainees can have higher expectations about communications and responses from teachers.**
- **Reasonable computer skills are required to get the best out of IT-based teaching and learning and specialist skills or access to technical support are needed for developing on-line resources.**
- **Lack of adequate technical support.**

Critical success factors:

- **The choice of technology must be driven by the needs of the learners and the context in which we are working.**
- **There must be enthusiasm for using IT and a positive attitude towards advances in technology amongst both teachers and students/trainees. Students/trainees must easily see the need for and benefits of using IT rather than having it imposed on them.**
- **Learners' needs and experiences must be taken into account when designing IT-based teaching and learning.**
- **Potential lack of direct contact needs to be managed.**
- **Students and trainees need to be directed and counselled on how to access quality information to avoid information 'overload'. Internet resources need to be reviewed in the same way that literature is reviewed.**
- **IT-based learning materials and activities should be introduced in an incremental way, building on current activities, in order to gain and maintain the commitment of students/trainees and allow time for change.**
- **IT-based learning materials must be fully integrated into the learning programme and must not replace other traditional methods such as text, lectures, small group discussion which accommodate different learning styles.**
- **Learning experiences must be constructed to allow students sufficient time to interact with the content. However if too much time is being spent on an activity, the assignments and activities may need to be re-examined. You should explicitly state your expectation of how much time students should expect to spend on a learning activity.**
- **IT teaching and learning must encourage students to engage in the learning process and promote active involvement and student/trainee participation.**
- **Development and training must be provided to equip students/trainees and staff with the skills and knowledge to utilise IT systems effectively to support learning. Staff development and training needs should be clearly identified and a programme designed which includes in-house training and outsourced programmes.**
- **It is important to ensure that sufficient technical support is provided for students/trainees and staff in order that they can use IT effectively.**
- **There must be a good IT infrastructure as this will determine the success and effectiveness of introducing IT.**
- **IT should be seen as a daily working tool to enhance communications and to support service commitments and not just to support teaching and learning.**

- **There needs to be a clear set of set of policies, procedures and guidelines covering issues such as: access restrictions to IT systems for internal and external users; security issues; levels of technical support and training which users are entitled to access; access and use of external resources; copyright issues; privacy laws and consent regarding the use of patients and clinical information including images and data; procedures for producing, storing, updating and removing Intranet materials; editorial control of material produced.**
- **An evaluation strategy should be developed to measure and assure quality. Evaluation activities should include: establishing regular monitoring procedures; gathering and analysing baseline data; setting targets which are measurable and achievable; ensuring feedback informs strategic and operational development.**
- **When developing web resources the design must be well structured with information organized into manageable chunks that deal with one topic or areas and eary movement between sections and documents.**

Some of the other critical success factors, such as user acceptance and commitment of a key group are relevant as well. See section on using Video Technology in teaching and learning

Action to be taken to introduce IT in teaching and learning

- **Think about what you are trying to achieve and your intended learning outcomes. Why do you want to use IT? What are the benefits to the course and to students/trainees of an IT-based approach? For each educational activity, the question of whether IT can facilitate the achievement of the educational objectives should be addressed.**
- **As the development of new IT-based resources may be costly, you will need to review what is already available, whether it can simply be converted to a suitable IT format or whether new resources need to be developed. You may want to simply customize information already available. Find out about sources of funding to support development of resources and make sure you allow yourself enough time for development. You might want to look at joint development projects with other staff from within your own organisation or with other organisations. Costs must take into account the 'life' of the resource – how many learners will use resource and how long will it remain relevant or how often will it need to be updated.**
- **Involve other teachers and students/trainees in creating new material. New resources must be flexible enough so that they can evolve and change over time. You should evaluate material at an early stage to make sure that its presentation, the user interface and the level of difficulty is appropriate. No one can know everything there is to be about using technology and about the subject being taught. Try to involve designers and technicians as well as subject experts and users.**
- **Avoid duplication of effort by liaising with your colleagues.**
- **Try to find areas where IT-based teaching and learning can replace traditional ones. If you only use IT resources as a voluntary additional source of information they might not have much impact.**
- **You will need training to use the appropriate technology in particular settings, eg to give lectures or develop self-assessments. This is often freely available from your employer or the local Trust – contact the HR**

department or Training Department for information or look on your Trust website for information. Most Trust libraries will offer courses in information searching and retrieval skills and how to use specific bibliographic databases. You will also need to find out how to access technical support.

- **You should encourage student-driven activities, particularly for active and self-paced learning in small groups.**
- **Make sure students/trainees have access to the facilities they will need. Do all students/trainees have access to e-mail? Find out where and when can they access computer facilities in the workplace and how many students/trainees have computers at home with internet connections.**
- **Make sure you have the facilities you need to support IT-based teaching and learning in seminar rooms and other rooms used for teaching? If not, where might they be available. Again, your training department or library may be able to help or direct you.**
- **Find out whether other teachers who may be involved have the appropriate facilities.**
- **Use IT for administrative purposes and communications to help users develop their skills, eg for timetabling, information about educational events and encourage students/trainees to use IT for logging personal development and producing reports.**
- **Think about how you will evaluate the teaching and learning to get the maximum learning from the experience.**
- **Index resources for future access. This is very important for future search and retrieval.**
- **Use material free of copyright restrictions, thus eliminating the need for password protection.**
- **Date your material and note revisions.**
- **"Watermark" (visibly or invisibly) images for acknowledgement or tracking.**
- **When designing online assessment you will need to decide what type of assessment you want to use which will depend on what you are assessing and whether the assessment is to be formative or summative. You will not be able to use computers where significant input is required to mark and give feedback on assignments, eg for essays or projects. You will be able to use online assessments for objective questions, such as multiple choice or true false questions and model answers can provide instant feedback for students/trainees.**
- **You need to identify all references found in both Internet search engines and library resources and cite both text-based and web-based references.**

What is different about teaching and learning using IT?

Teachers need to shift their role from lecturer to mentor or facilitator, someone who is present, albeit not always physically. See paper *Educational supervision, personal support and mentoring* for further information. You will also need good IT skills and some knowledge of how to integrate technology into the curriculum as well as a consideration of e-moderating through synchronous and asynchronous learning.

Introducing Problem Based Learning

Dr Frank Harrison

Problem based learning – or PBL – is still sometimes thought of as a new approach to medical education. In fact it was first implemented at McMaster University in Hamilton, Canada in the late 1960s. It can also be argued that PBL is the formalisation of a process that has underpinned clinical teaching for many years. PBL is now to be found in undergraduate medical curricula throughout the world, and its introduction in the UK was encouraged by the General Medical Council's 1993 recommendations on undergraduate medical education, *Tomorrow's Doctors*.

What is Problem Based Learning?

As Davis and Harden (1999) have indicated there is still some confusion about what PBL really is. It is best thought of as an educational approach where students are encouraged to take an active role in their learning by discussing a problem (or scenario) centred on a clinical situation, community problem or current scientific debate. In the clinical context this might be a description of events when a patient attends a GP surgery or A & E department. The history, presenting complaint, signs and symptoms, ethical issues, investigations needed (and their outcomes) can all be woven into the case as required. The problem has to be written so that the students can identify the areas that they need to explore in order to be able to resolve satisfactorily gaps in their knowledge and understanding that become apparent during group discussion.

A key point in understanding the nature of problem based learning is to differentiate it from problem solving. In problem solving exercises the basic assumption is that the students have the knowledge and skills required to arrive at a solution (albeit that the application to a specific problem may further stretch them). In PBL the problem is the starting point that enables students to identify for themselves new areas for their learning.

For problem based learning to be effective it is important that participants work together in a structured way. Initially a problem, designed by the faculty staff, is reviewed by a group of students. Ideally there should not be more than ten members in the group, and they should select for themselves a student chair and scribe for the session. (The scribe will record the ideas generated by the group on a whiteboard or flipchart). It is the task of the staff facilitator to ensure that the group works through the problem in a methodical way. A series of steps can be identified – that below is based on the Maastrict seven jumps model.

1. **The group starts by identifying any terms with which they are unfamiliar. Some members of the group may have some prior knowledge that will help the group.**
2. **The students openly discuss the scenario and define the problem.**
3. **The group brainstorms possible explanations or hypotheses which fit with the events/problems they identified.**
4. **Some provisional explanations/conclusions are reached that would reasonably explain the essence of the case.**

5. **The students formulate their learning objectives – those aspects which the group have determined need further study.**
6. **Working independently (or in pairs) the students use the resources available to them to achieve the learning objectives.**
7. **The group meets again a few days later to pool the information they have gained from private study and discuss the case in the light of this new knowledge.**

Ideally the students and facilitator should then evaluate the case and its suitability for problem based learning. Schmidt (1983) provides a fuller description of the process.

The Role of the Facilitator.

The use of the word 'facilitator' here, rather than 'tutor' is intentional. The traditional tutor initiates activities of the group, controls the content, questions students and imparts information. This type of learning activity may be described as teacher centred. The PBL group is much more student centred, and as we have seen above the students take an active role in defining their learning. If the *facilitator* is tempted into the more traditional role of *teacher* the process is short-circuited and the advantages are lost.

This does not mean that the facilitator is entirely passive. There are practical aspects to making PBL successful – for instance the seating should be arranged in a circle so that all members can establish eye contact with each other (and the facilitator), as described above for the "open" discussion model. The facilitator has prime responsibility for ensuring that the group functions well.

Pause for a few minutes to consider what practical skills a facilitator can bring to helping the group be successful at PBL.

Compare your ideas with those below.

- Ensuring the group works through each step in turn
- Maintaining a non-threatening atmosphere that permits students to feel able to comment freely
- Making certain that all views are respected
- Encouraging all members of the group to contribute to the discussion
- Keeping the group working together and not splitting into sub-groups
- Asking non-directive questions to stimulate further thinking – for instance requesting clarification or expansion
- Opening new directions of thought for the students to follow
- Restating ideas in a way that helps the group develop them further
- Gentle confrontation if this helps individuals with their thinking
- Providing additional material at the appropriate time (depending on the structure of the case)
- Helping the students to define their learning objectives
- Acting as timekeeper (unless this task is assigned to a student)

From this list it will become clear that skilled facilitators have good communication skills. They must be willing to encourage the students to become active participants in their learning and resist the temptation to take a leading role themselves. Because most teachers are accustomed to a more didactic role introduction of problem based learning almost certainly involves staff development training sessions. Further discussion of the roles and responsibilities of facilitators will be found in Maudsley (1999).

Writing Problems

PBL encourages student independent learning, but the extent to which it is effective is determined (to some extent) by the cases presented to the students. A well-written case will stimulate a lively group discussion, generate valid learning objectives and motivate the students to research the answers. Dolmans et al (1997) have suggested seven principles to be observed in designing cases. These are:

1. The contents of a case should adapt well to students' prior knowledge.
2. A case should contain several cues that stimulate students to elaborate.
3. Preferably present a case in a context that is relevant to the future profession.
4. Present relevant basic sciences concepts in the context of a clinical problem to encourage integration of knowledge.
5. A case should stimulate self-directed learning by encouraging students to generate learning issues and conduct literature searches.
6. A case should enhance students' interest in the subject matter, by sustaining discussion about possible solutions and facilitating students to explore alternatives.
7. A case should match one or more of the faculty objectives.

PBL in the Clinical Setting

The cases for problem based learning tend to be thought of as paper-based – and indeed the majority certainly are. These are suitable for use in non-clinical settings, and extending PBL into the clinical setting has given rise to a number of studies investigating the use of patients in PBL. Aspegren et al (1998) describe how they modify the PBL process in the Department of Surgery in Malmo, Sweden. Before the seven steps were undertaken, a patient joins the group to provide an opportunity for students to interviews and examinations. Further data, such as laboratory investigations may also be made available. The usual stages of PBL are then followed in the absence of the patient. The student evaluation was generally very positive with 26/28 preferring patients to paper cases.

At Manchester, UK, a strategy has been developed to strengthen the link between paper cases and clinical experience in the third and fourth years of the course. (O'Neill at al, 2000). The PBL process is modified to encourage students to bring clinical experience to the first tutorial and to seek experience related to the problem between PBL sessions.

The participation of patients in PBL in the general practice setting has also been reported. (Dammers et al, 2001). A suitable 'problem area' is selected (e.g. chest pain, diabetes) and a patient who "illustrates" the problem area identified from amongst the patients registered with the practice. With the prior consent, the students centre their learning on this real patient rather than on a paper scenario. The benefits of this approach are discussed by the authors.

Case based learning and clinical scenarios

You may want to explore different approaches from the 'classic' PBL approach to encourage and develop learners' problem solving skills or clinical decision-making skills. Such approaches might include:

Clinical cases

Developing a 'bank' of interesting clinical cases that illustrate various aspects of clinical learning. These might include:

- **case notes/extracts from a case history**
- **investigations carried out and the results, X-rays, etc.**
- **reports written by other health professionals**
- **examples of letters (referral, discharge, follow up)**
- **video or audio tapes of patient encounters**
- **extracts from relevant articles about the clinical condition, treatment options etc.**

These cases can be used as stimulus material to encourage students or trainees to learn about a specific clinical condition. This can be helpful for example, if the condition is either a common one, but the patients the learners have had the opportunity to see have not been typical or stayed in hospital long enough. Because the material is based on real patients and real resources, it is seen as interesting and relevant by learners and allows the teacher to pre-select material which illustrates specific learning points.
Remember to seek appropriate permissions when copying and using such material.

Clinical scenarios

You may find it useful to write or think about some typical clinical scenarios to use as a stimulus for discussion or to encouraging learners to seek out more information about a topic. These may cover wider issues than just clinical conditions. The advantage of writing these yourself is that you can tailor them to include the issues you want learners to discuss or find out more about. These might include legal or ethical issues, public health issues, resource allocation issues, etc. Such clinical scenarios might include:

- **newspaper cuttings about clinical cases**
- **articles from eg. the Lancet or BMJ**
- **reports or recommendations from public bodies or agencies**
- **statistical reports showing trends or disease patterns**

- **a stimulus piece you have written which points the learners in the right direction or which asks some key questions**

Other types of clinical scenarios could be written more like anecdotes about situations in which you or colleagues have personally been involved. These may be used to stimulate discussion about doctor-patient relationships, dealing with carers or relatives, communicating with colleagues, dealing with complaints, etc.

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Useful links

The Deliberations site at http://www.city.londonmet.ac.uk/deliberations/lecturing/urls.html gives some hints on lecturing, effective presentations and communicating effectively. This includes some notes written for the site by Phil Race and some external links.

Standford University's resources and handouts for Faculty, Academic Staff-Teaching and Teaching Assistants has useful information on lecturing and tips for better lectures as well as a wide range of other resources: http://ctl.stanford.edu/handouts/index.html

The Art of Communicating Effectively
http://www.presentingsolutions.com/effectivepresentations.asp

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2 Teaching and learning methods: o preparing for teaching o facilitating the integration of knowledge, skills and attitudes o teaching and learning in groups o facilitating learning and setting ground rules o explaining o group dynamics o managing the group o lectures o small group teaching methods and discussion techniques o seminars and tutorials o computer based teaching and learning information technology and.Â Morris, Undergraduate Medicine Training Coordinator at Imperial College London and Dr Frank Harrison, Senior Lecturer in Medical Education, Imperial College London. Introduction This paper has been developed alongside Teaching and Learning in the clinical context: Theory and practice and Integrating teaching and learning into clinical practice.