Chapter 1

Teaching and Facilitating Learning in Obstetrics and Gynaecology

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1 Introduction

Teaching is a professional requirement of all doctors, and as teaching skills are not innate, they need to be learned and developed in order to teach competently. This chapter provides a brief overview of educational theories, various teaching and learning methods, and issues relevant to educational practice in the clinical setting.

1.1 Introduction to Educational Theories

There are a number of educational theories that underpin the practice of teaching and learning. Some of the more widely used theoretical frameworks relevant to medical education are highlighted here.

Andragogy Knowles suggests that adult learners share the following characteristics [1]:

- They are independent and self-directed learners.
- They use accumulated experience as a scaffold for new learning.
- They value integration of new learning into their existing commitments.
- They value problem-centred approaches to learning.
- They have internal drivers for motivation to learn.
- They need to know why and how learning benefits the learner.

In any setting involving adult learners, these characteristics need to be considered when planning educational events.

Constructivist theory Learning occurs through the construction of new ideas or concepts built upon the learner's existing knowledge and experiences. As this is based upon an individual's own previous knowledge and experiences, new knowledge can be constructed at the individual level or be co-constructed by groups of learners within communities of practice [2]. Tutors could facilitate this approach by encouraging questioning and reflection in order to integrate new information. This forms the basis of problem-based learning, where learners use a case scenario (problem) to establish what they already know and then identify additional learning needed to address the 'problem'.

Behaviourist theory Learning is an aspect of conditioning using a system of rewards and targets in education; learning thus occurs through a response to environmental stimuli. For example, in teaching clinical skills, the skill is first modelled by the tutor; the learner

observes what the expert tutor demonstrates and models their practice on this, aided by instruction and feedback from tutors.

Cognitive theory Learning focuses more on the learner than on the environment, especially the complexities of human memory. Information needs to be organised, structured and sequenced so that learners are able to mentally process and retrieve information in activities such as problem solving.

Social cognitive theory Learning is a social phenomenon which occurs through observing and interacting with others and with our environment. Social learning theory, originally developed by Bandura, bridges cognitive and behaviourist learning theories by emphasising the roles of cognition as well as the environment in mediating learning [3]. Within clinical environments, this theory can best be demonstrated through learning that occurs through group work, from role models or from non-verbal and verbal communication. Closely linked to this is the notion of the 'proximal zone of development' (PZD) described by Vygotsky. The PZD is a zone between what learners can do unaided and what they cannot do, where learners can complete tasks with guidance or through interaction with more capable peers [4].

Communities of practice Lave and Wenger proposed the notion of a 'community of practice' (CoP) to describe a group of people with a common profession or a shared interest [5]. CoPs can occur because of shared interest or can develop over time to share knowledge and experiences and learn from each other in a particular field. CoPs can be physical or virtual, depending on whether the collaboration occurs in a physical setting or in the online environment. Social networks and social media have led to CoPs developing virtually for medical education generally, as well as for particular specialties and sub-specialties.

Reflection and reflective practice Reflection is a skill that enables learners to apply past and current experiences to unfamiliar situations, either as they unfold or after the event, in order to learn from them. These are called 'reflection in action' and 'reflection on action' respectively [6]. Reflection enables critical evaluation of practice so that individuals can learn from their experiences in an ongoing manner. For both the learner and the tutor, regular reflection on practice either individually or with peers, can help individuals develop insight and grow in competence.

Learning styles Each individual might have preferences for how they learn. Several validated tools are available to enable learners to identify their preferred styles of learning. However, in recent years, the importance of learning styles to learning has been questioned on the basis of a lack of evidence to suggest that learning is most effective when delivered in a preferred style [7]. In practice, however, when teaching a large group, educators could make use of a variety of methods to ensure learner engagement.

1.2 Technology-Enhanced Learning

In recent years, there have been several developments in the field of medical education that have enabled better engagement with learners, facilitated active learning and improved access to learning resources, as well as delivering training safely in near-authentic settings. Many of these methods continue to be developed further and refined to improve delivery, engagement and assessment of learners within medical schools and in the clinical environment.

The flipped lecture While the traditional lecture focuses on the passive transfer of information from the teacher to the learners, the pedagogical model of the flipped lecture is based on the provision of learning resources such as podcasts, screencasts, videos or reading material to learners in advance. Classroom time is then utilised to engage with learners actively in discussion, small group work or problem-solving activities facilitated by the teacher. By providing access to all the learning materials in advance, this model ensures a better use of classroom time for more complex activities and critical thinking, and thus a shift from passive to active learning.

Social media and social networks A number of social media applications and websites are being increasingly used in medical education. Social networking software such as Twitter and Facebook can be used to engage with learners, institutions, resources and content. These permit large numbers of users to create and share resources instantly, with a much wider and faster reach than traditional methods of communication and dissemination. In addition, tools such as wikis can be used for collaborative working and to create resources, while blogs can be used for reflection and reflective practice, and can then be shared across networks using Twitter, Facebook or other social media.

Simulation and virtual patients Simulation as a learning tool is gaining popularity in medical education because of its potential to provide training in a risk-free, near-authentic environment. While simple simulation techniques have long been available to train practitioners safely using models and mannequins, more sophisticated and higher-fidelity simulations such as virtual patients are now available for both technical and non-technical training. Recent developments in this field also include computer-assisted simulation and virtual reality offerings. Simulation training is now available in various aspects of specialty training in obstetrics and gynaecology.

Mobile devices, apps and the gamification of learning The development of applications for use on hand-held mobile devices has changed the way learning resources can be accessed. Several apps specific to medical education are now available, so that students and busy healthcare professionals can rapidly access learning tools directly from their workplaces using mobile devices. Apps are also available to facilitate student engagement and interaction during teaching sessions through polls and quizzes. In addition, audience response systems such as clickers are gaining popularity for facilitating interaction in large group settings. The use of games (gamification) via mobile apps has been reported to promote learning and engagement through competitive or collaborative, risk-free training opportunities, and it provides instant feedback for both undergraduate and postgraduate medical students.

1.3 Current Learning Concepts in Other Sectors

There are several situations in medicine where training occurs in a high-stakes environment and errors lead to significant consequences. In the aviation sector, pilots train in high-fidelity safe environments using simulator technology and learn basic flight skills that include planning, briefing, use of checklists and protocols, and extensive debriefing after completing the task. The traditional 'see one, do one, teach one' model of medical education is gradually being replaced by contemporary methods to prevent errors and protect patients, as well as to protect against litigation. Surgeons can use simulation to improve suturing skills or use a variety of simulated models to practise critical operating procedures.

Standardised problems and solutions that are task-centred and measurable could be used to assess competence. At present however, the acquisition of simulation competency before operating on real patients is not feasible. Furthermore, clinical practice today consists of patients with complex diseases and multiple co-morbidities that can pose a challenge even to the well-trained surgeon. High-fidelity simulators required for training in advanced surgical procedures are not yet available. Training still largely depends on learning through supervised practice in the operating room, receiving immediate feedback and correcting errors on the spot where possible.

In high-profile sports, a combination of multimedia analysis, video recording and debriefing are used to modify behaviour and enhance performance. There is potential for video recording of activities such as operative procedures, which could be followed by debriefing in order to refine new skills and improve execution. This is one way of generating highly individualised feedback.

2 Factors Influencing Learning

Learning is influenced by several factors, such as motivation of the learner, perceived relevance of a learning opportunity to their learning goals, the context and the educational environment. Creating the right context and environment for learning is as important as the actual teaching and learning methods used. The most effective learning takes place when it is relevant, timely and based on real learning needs placed within appropriate contexts. There are three main aspects to consider: the educator, the learning environment and the learner.

2.1 The Educator

Harden and Crosby suggest that the 'good teacher' is more than just a lecturer, and they describe 12 roles of a contemporary medical educator [8]. Good teachers are excellent communicators who involve learners actively within the learning process and inspire and motivate them. They create and support a learning culture and direct their efforts towards meeting the learning needs of the learners [9]. Good medical educators also use their clinical knowledge to develop clinical skills and clinical reasoning among learners.

Creating an environment conducive to learning requires clear communication between professional groups and individuals. Regular planning and review meetings of supervisors can be used to discuss quality improvement of training, to plan learning events and to manage trainee performance and concerns, involving trainees themselves when necessary. Supervisors need to train and retrain to provide consistency, to calibrate their assessments of trainees and to develop themselves as clinical educators.

Being engaged in continuing professional development (CPD) of teaching skills is just as important as CPD for updating clinical knowledge and skills. Guidance from the General Medical Council (GMC) now requires all named clinical and educational supervisors of postgraduate medical trainees to be trained, recognised and approved for this purpose in line with a professional standards framework, which includes CPD as an educator [10].

2.2 The Learning Environment

The ideal learning environment would have a learning culture where trainees are valued and feel safe to learn and progress to achieve their full potential. In such an environment, the supervisors act as good role models giving regular constructive feedback to trainees,

appreciating that they are still learning and might make mistakes. They involve patients and carers in learning events and opportunities, and they establish a relationship of mutual trust between supervisors, trainees and each other, with clear expectations for each [11].

Interprofessional learning The Centre for the Advancement of Interprofessional Education (CAIPE) defines this as learning that 'occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care' [12].

According to CAIPE, effective interprofessional education (IPE) encourages professionals to learn from each other, respecting each other's contributions, and to involve service users and carers to focus more acutely on their needs and improve the quality of care. IPE thus increases the personal satisfaction of learners and enhances professional practice.

For postgraduate learners, there is some evidence to suggest that IPE embedded in quality improvement initiatives can improve the quality of care through improved teamwork or more patient-centred communication. The World Health Organization framework for action on IPE and collaborative practice highlights the potential for successful interprofessional collaboration and teamwork in improving health outcomes within any local health system, through embedding IPE in health professional education [13].

A case study carried out in a primary care setting in the UK suggests that clinical learning occurs through engagement and opportunity, even among transient learners, across all professions and all levels of experience [14]. Learner engagement is higher when there is recognition and respect for learners, material relevant to the curriculum and in line with learner expectations, and an emotional response to tutors and/or peers. This response could be related to tutor enthusiasm or even to the challenges encountered in class. Learning in any clinical setting is facilitated through meaningful patient encounters and professional or peer support in an environment conducive to learning. This highlights the importance of ensuring that workplace culture truly facilitates learning, and that all healthcare professionals are motivated and fully engaged so that learners feel valued and can thrive in this setting.

2.3 The Learner

Several learner factors also influence learning; one of these is the learning needs of the individual. Assessment of learning needs is a process by which the gaps in a learner's knowledge and/or skills are identified with the aim of meeting these needs through a personal development plan (PDP). This process includes reflection and self-assessment of current performance against expected performance, as well as seeking external feedback from peers, supervisors and even patients. Expected performance may be determined by learning outcomes appropriate to the stage of training within the curricula and by assessing the individual needs of the trainee. Several tools are available to assess the learning needs of individuals; these include analysis of strengths, weaknesses, opportunities and threats (SWOT analysis), completing a 360-degree assessment and examining a trainee's portfolio to assess achievement of curricular learning outcomes and skills development [15]. All these examples could be used in combination for senior trainees to prepare and assess readiness for their first employment following completion of training.

Supporting individual learners Within the workplace setting, it is important that trainees' individual welfare and physical environment are addressed. Delivering appropriate induction programmes to new starters can help to provide clarity of expectations about their roles, information about their physical and clinical environment, and points of contact for raising educational or clinical concerns. Trainees should receive supervision appropriate to their competence, be encouraged to get involved in planning learning opportunities and to engage in interprofessional learning and team working to ensure good clinical care and patient safety.

Supervisors should ensure that trainees are adequately supervised and supported, particularly when learning new skills. To do this effectively, the competence of trainees needs to be assessed to enable supervisors to decide the level of supervision required. In most cases, as trainees acquire new knowledge, skills and experience and develop competence, the level of supervision needed changes from direct to distant, as detailed below:

direct supervision – physical presence required in the same room as the trainee
immediately available supervision – supervisor is in the vicinity and available to come to the aid of the trainee immediately if required
local supervision – supervisor is on the premises, available at short notice to offer immediate help by telephone and able to come to the aid of the person within a short time
distant supervision – supervisor is on call, available for advice and able to come to the trainee's assistance in an appropriate time.

Competence of trainees can be assessed through various means, such as direct observation, workplace-based assessments, training log books and feedback from other staff.

The challenges in facilitating learning Didactic teaching can encourage dependence on supervisors to achieve learning that could be addressed through other learning opportunities in the workplace. Using questioning techniques has several benefits in the supervision setting. When used in a supportive manner, they can promote critical thinking among trainees, help in assessing competence assessment and progression, and foster independent thinking as trainees learn to take more responsibility for driving their own training [16].

2.4 Balancing the Needs of Service Delivery with Education

Trainees play an active part in service provision in the workplace. In a culture where trainees are valued and appropriately supported, trainees should take responsibility for providing patient care of increasing complexity as they progress through training, using reflection, reflective practice and constructive feedback from supervisors to develop their knowledge and skills effectively. In such an environment, trainee learning needs are balanced with the service needs of the department so that patient care is not compromised.

In relation to patient safety, communication issues are thought to play a major role in patient safety incidents and harm. Regulations leading to reduced working hours of doctors have led to increased shift-working and frequency of handovers. Patient handovers from one healthcare professional to another are considered to be particularly risky communication tasks in healthcare because of omission of critical information or transfer of erroneous information.

A systematic review of physician handovers in the US reported that, although there is a consistency in suggested strategies to improve handovers, there is a lack of high-quality evidence to support these strategies. The review's recommendations emphasised a need for high-quality studies focusing on systems factors, human performance and the effectiveness of structured protocols and interventions in reducing medical errors and improving patient safety [17]. Training programmes therefore need to include formal instruction in handovers and quality monitoring of handovers to ensure patient safety.

Another initiative to ensure patient safety and wellbeing is the increasing use of simulation within training programmes. Risk reduction strategies to prevent medical errors have highlighted the potential for the use of simulation to provide patient care safely. More recently, efficacy studies have supported the use of realistic simulators in delivering training on technical, and even behavioural and social skills in medicine. This is an area of medicine that is growing very rapidly.

3 Strategies for Teaching

3.1 Teaching Methods

In general, the type of teaching delivered depends largely on the skills and expertise of the educator, the number of learners and their needs, and available time and resources.

3.1.1 Small Group Teaching

Teaching methods such as tutorials, workshops and seminars are typically used for smaller groups. In general, these require students to be more interactive and to undertake practical work, discussion or problem-solving exercises.

Ideal structure and process The ideal small group consists of about 8–10 learners with active involvement of all group members. In line with the constructivist approach, there is a need to activate prior knowledge (scaffolding) and use questioning techniques to facilitate discussion and understanding. Tutors need to manage the very vocal and quiet students appropriately in order to secure the best outcome for the group.

Strengths This approach facilitates active, self-directed learning in an efficient manner, within an interactive environment. It encourages problem solving and team working through active listening, persuading, negotiating and presenting. It provides learners with opportunities to practise reflective learning, and it also allows tutors to develop their facilitation skills.

Limitations This method can be time-consuming and requires resources such as tutors, rooms and materials. The learning derived by the group depends to some extent on the group dynamics and the facilitation skills of the tutor. It also requires preparation from learners between sessions.

Potential solutions These include ensuring clarity of process and transparency where tutor and learner contributions are concerned, establishing ground rules, tutor training and periodic opportunities to discuss the progress of the tutor and the group.

Evaluation Methods that could be used for evaluation in this setting include

- self-assessment (by the individual group member)
- assessment of team work (by the individual group member and tutor)

- reflection on own and group performance (by the individual group member and tutor)
- use of feedback questionnaires.

3.1.2 Large Group Teaching

The large group lecture, a traditional method of teaching, is best used when a large number of learners have a common learning need.

Strengths This is an efficient means of transferring information from a tutor to large numbers of learners. It is particularly useful to garner interest and stimulate learners, introduce core knowledge, explain difficult concepts and guide learning.

Limitations Delivery of teaching using this method is hugely dependent on lecturer confidence and skills. It is not effective for teaching skills development, changing attitudes or encouraging higher-order thinking, as it encourages passive learning. It is difficult to gauge the understanding of the whole group, and this format expects all learners to learn at the same pace. Recall of taught material appears very limited following a lecture.

Potential solutions The active engagement of learners improves the retention of knowledge. Many lectures now offer well-paced delivery and include the use of interactive quizzes, buzz groups, peer instruction, audience response systems and so on. These allow the educator to test knowledge, facilitate discussion and interaction, and provide an improved learning experience [18].

Ideal structure and process Delivery of lectures can be enhanced through rehearsal in advance and the use of audio-visual aids to engage learners during the session. A well-constructed session should highlight the learning objectives to be addressed, make links to previous knowledge and curricula, use good signposting and offer opportunities for interaction at regular intervals. The use of practice assessments or discussion can help to consolidate and evaluate learning.

Evaluation Methods that could be used for evaluation in this setting include

- use of audience response systems, short questionnaires or verbal feedback from learners
- peer observation and feedback from colleagues.

3.1.3 One-to-one Teaching

One-to-one teaching is best used when a specific issue or specific learner needs to be addressed. There are some situations in the workplace setting where one-to-one teaching is preferable to group teaching. Examples of these are: direct supervision, mentoring, coaching, direct observation and clinical patient teaching. This teaching method requires more intensive learner involvement through observation, demonstration, reflection, discussion or debriefing.

Clinical bedside teaching focuses on real situations that are directly relevant to professional practice. However, this is often opportunistic, and the clinical environment can be less than ideal for teaching. Additionally, clinical teaching often competes with service commitments and time pressures, which can lead to inadequate supervision and feedback, lack of time for reflection and discussion, and a focus on factual recall rather than deeper learning and problem solving [18].

Strengths One of the advantages of one-to-one teaching is that it can provide active learning in an authentic setting, identify current gaps in knowledge and skills and address them, and provide opportunistic teaching and timely feedback. Teaching can be customised to the learner, and therefore it provides an excellent opportunity for direct, active observation and feedback. It also enables role modelling of desirable (personal and professional) attributes and promotes autonomy and self-directed learning among individual learners. It can also enhance skills of reflection among learners.

Limitations It is only effective within a relationship of trust between the two individuals. It is resource-intensive and requires sufficient time to be delivered appropriately.

Potential solutions Tutors could use open-ended questions to seek clarification and encourage learners to participate actively. The 'one-minute preceptor' model integrates clinical teaching effectively and efficiently into the clinical setting through five steps or micro-skills: getting a commitment from the learner (e.g. making a diagnosis), probing for supporting evidence, teaching general rules (e.g. presenting symptoms and signs), reinforcing what the learner did correctly and correcting any mistakes [19].

Ideal process The supervisor and trainee would have pre-agreed ground rules and be prepared for the session. Identified learning needs would be addressed through active listening and observation and by asking questions to probe learners' knowledge and encourage active learning. Supervisors could encourage reflection and self-assessment, provide constructive feedback and act as good role models to their learners.

Evaluation Methods that could be used for evaluation in this setting include

- reflection on teaching/learning
- self-reflection and feedback
- progression in competence/skills development.

3.1.4 E-Learning

E-learning is being used increasingly to deliver learning flexibly to geographically dispersed learners or as part of 'blended learning', which combines both face-to-face and online learning. Learner interaction could be synchronous, asynchronous or both. In typical e-learning courses and programmes, as the tutor and learners are not face-to-face and communication might occur asynchronously, working in isolation could lead to low completion rates. Particular attention needs to be paid to learners' engagement with each other and with course tutors through the use of activities such as collaborative group work, discussion boards and engagement with social media. A newer development within this area is the advent of massive open online courses (MOOCs), which now offer learning internationally on a wide range of topics (including medical education), often attracting several thousand participants to each course [20].

3.1.5 Teaching Practical Technical Skills

Trainees in obstetrics and gynaecology (OBGYN) are required to acquire several competencies related to surgical procedures, imaging techniques such as ultrasound scanning, and consultation and communication skills.

Ultrasound scanning All OBGYN clinicians need basic ultrasound skills, as this is the most commonly used imaging method during early pregnancy. In the UK, the Royal

College of Obstetricians and Gynaecologists (RCOG) has developed the curricula (basic and more advanced), and it co-ordinates the ultrasound training programme for its trainees. The theoretical part is delivered through attendance at training courses or through online resources. The practical component is often delivered by sonographers in dedicated training sessions, although practical experience can also be obtained through opportunities in outpatient departments, early pregnancy units, labour wards and antenatal clinics. Trainees need to have the related competencies assessed and signed off in their portfolio.

High-quality training, direct supervision with feedback, case discussion with supervisors and ongoing experience are therefore required for individuals to achieve and maintain the required level of skill. Care must be taken to adhere to guidelines on maximum scanning times to minimise harm to patients. Scanning protocols are therefore of value to ensure that the required standards are met.

Surgical procedures Basic skills, such as suturing and tying knots, can be learned outside the operating theatre through the use of synthetic materials, bench models, animal or life-like models and simulation. More advanced procedures can be taught using technology such as video training equipment, simulation or virtual reality systems. Supervised operating procedures should be assessed regularly, and feedback should be given to the trainee. E-learning resources are available from the RCOG for the core surgical procedures required for OBGYN trainees, in addition to guidance on workplace-based assessments and the related logbooks.

Communication skills Communication in medicine is not an innate skill, and communication skills training can lead to better doctors, better patient interaction and better patient satisfaction. Communication skills in modern medical education are based on frameworks such as the Calgary–Cambridge guide to medical interviews, which combines content, process and perceptual skills [21]. This framework guides interaction with patients from the initiation of the consultation through history-taking, examination, explanation, planning and closing the discussion, while establishing a rapport and checking to ensure patient understanding. The guide facilitates effective communication, provides a framework for obtaining informed consent and paves the way for shared decision-making and a successful doctor–patient relationship.

3.2 How to Lead Departmental Teaching Programmes

Leadership and management skills are being increasingly recognised as key components of medical education, especially at the postgraduate level. These skills can be developed by attending training courses or through experiential learning, for example by leading and organising departmental teaching programmes. Engaging postgraduate trainees themselves in the planning and running of these programmes could lead to a more effective outcome for learners and to the development of leadership skills among senior trainees. Pedagogical methods used could range from seminars, lectures, group work and problem solving to journal clubs and high-fidelity simulation methods, depending on the learning outcomes to be covered. Journal clubs have the additional advantage of providing CPD through updates on new research regarding effective treatments and procedures.

3.3 How to Manage Personal Time and Resources Effectively

In addition to specialty-related knowledge and skills, there is also a need for postgraduate medical trainees to develop time-management and prioritisation skills for personal effectiveness and resilience. These 'softer skills' are often underemphasised within busy curricula. Identifying and supporting the development of these skills could be done as part of individual learning needs assessments and personal development planning by trainees and their supervisors. As learning often occurs through observation and modelling of behaviour, supervisors could be ideal role models for learning organisational and management skills, as well as prioritisation skills, in the workplace learning environment.

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