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Learning in small groups

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SUMMARY *There is a recent trend towards small-group work in undergraduate medical courses. Current understanding of educational strategies supports the use of small groups as an effective method of learning. Small-group work recognizes a movement towards learner-centred, problem-based and self-directed learning. The exploration of knowledge, learning through curiosity, the critical evaluation of evidence and a capacity for self-education are all fostered in small-group interactions. This article explores the rational arguments that support the movement towards small-group learning, the many benefits from small-group activities and the many types of small-group methods. Small groups interact in a variety of ways and the teacher has an important role. Barriers, more often perceived than real, may impede the adoption of small-group teaching. Practical guidance is offered on why to adopt small-group work and how to do it effectively. The teacher is provided with a framework for running small-group sessions and is given three simple checklists to consider before, during and after the small-group activity.*

What is small-group learning?

The term small-group learning can be misleading, as 'small' implies no definite number. The literature is equivocal on the number of students that constitutes an effective small group. Small-group teaching depends more on the features displayed by that group than on the number in it. Usually, but not always, meaningful interaction occurs more readily with fewer people. You may have your own preference. To you, effective groups may have less than 10 participants. However, some groups may work effectively with a larger number of participants, some may be ineffective with a smaller number. What matters is that the group shows three characteristics: active participation, work towards a specific task and reflection.

Active participation

The most important feature of small-group work is that interaction should take place among *all* present. Levels of participation may vary among members. It is important that there is some participation by all members.

A significant aspect of group work is the response of participants to other members in the group. Responses may occur in a number of ways. If face-to-face, effective discussion depends on interaction, this is much easier to achieve around a small table or in an open circle rather than with the students sitting in rows or around long tables. Ensure that members of a group can see each other, to pick up visual and verbal cues from one another.

Group work can also be achieved through teleconference or telephone. If the link is sound only, visual cues become insignificant. Reliance is placed on audio response and interaction.

A specific task

The group must have a clearly defined task. Group work should be focused. Unclear objectives can cause frustration—for the teacher (Tiberius, 1990) as well as the students. If students are confused about the objectives, the class may appear unresponsive. The task and objectives should be clearly understood by all members of the group, allowing them to focus on that task.

Reflection

In small-group learning, it is important to learn from an experience and to modify behaviour accordingly. Deep learning is a key feature of small-group work; reflection is a key feature of deep learning. Reflection may be explicitly scheduled into a session. Alternatively, a session may be dedicated to the reflection process. The importance of reflection was highlighted by Kolb (1984) in his experiential learning cycle. Reflection is generally considered an important aspect of turning experiences into learning (Boud *et al.*, 1995).

These three characteristics of small-group work may be more obviously displayed in groups that are small in numbers. However, a skilled facilitator may be able to engender some of these qualities in larger groups.

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Why is learning in small groups important?

Small-group work has always been important in medical education. Its prominence has recently increased in higher education for several reasons. Understanding of the key features of small-group work has increased. These key features include active participation (Garland, 1994; Tribe, 1994; Walton, 1983), self-direction and the promotion of deep learning. Surface learning is superficial learning, such as the regurgitation of facts and figures; it is passive and shallow, with the knowledge tending not to be retained by the student (Rowntree, 1985). Deep learning goes beyond this, with questioning and evaluation of what is being learnt.

In addition to being an effective method of learning, small-group work offers experience of working in a group and helps students acquire group skills. Such skills are an important feature for general employment (Garland, 1994; Tribe, 1994). Gaining an understanding of the difficulties that can arise in groups and developing self-confidence through expressing and defending one's ideas (Reynolds, 1994; Walton, 1983) are all skills developed through group work. Group skills are crucial in the medical profession, where working in a group or team is an important aspect of holistic health care. Group skills also include the ability to communicate effectively, the prioritizing of tasks, the management of time and the exercise of interpersonal skills. Frequently, students may be expected to acquire these attributes without being given any designated opportunities to practise or demonstrate them. Small-group work gives students such opportunities.

The benefits of small-group learning

Small group teaching has many advantages to offer the learner.

Active learning

Only an individual truly knows what understanding he or she has of a topic. Learning is fundamentally concerned with what an individual does not understand. In learning, a lack of understanding is identified, and converted to understanding. It is sometimes difficult, in isolation, to work out what one understands, does not understand and needs to understand. Norman & Schmidt (1992) consider that learning should be an active, constructive mental activity that enables students to build from what they already understand. How should a student assess that understanding or lack of understanding? Group discussion activates previously acquired understanding, helping identify any deficits and facilitating new comprehensions (Barrows & Tamblyn, 1980; Schmidt *et al.*, 1987).

Group work maximizes the opportunity for students to use any prior learning, to identify their own learning deficits and to develop understanding of material. Small-group work allows students to self-direct their own learning. It encourages reflection upon and control of learning activities and development of self-regulatory skills conducive to lifelong learning (Barrows & Tamblyn, 1980; Glaser, 1991).

Encouragement of self-motivation

An individual learns more when enjoyably involved (Reynolds, 1994). Small-group work increases a person's involvement. Active involvement motivates people to learn; it also allows them to learn more effectively (Tiberius, 1990). Students and staff both report, as a result of working in small groups, increased short-term motivation and satisfaction with learning (Neame, 1982; Norman and Schmidt, 1992; Schwartz, 1991; Walton & Matthews, 1989).

Facilitation of application and development of ideas

Associated with involvement is the opportunity to apply ideas and to consider potential outcomes. A functioning group will help clarify concepts and theories. Discussion, acceptance and seeing connections within the group may enhance a member's intellectual understanding of an issue. A didactic lecture seldom allows students to test out hypotheses or to explore different possibilities.

Promotion of deep learning

Deep learning is better than surface learning (Entwistle *et al.*, 1992; Jacques, 1986; Rowntree, 1985). For surface learning—learning only facts—there is little difference between using a lecture or a small-group method (McKeachie, 1986). Indeed, lectures may even be superior (Abercrombie, 1971; Rudduck, 1978). However, in a group, members are more likely to exhibit a deep-learning approach (Coles, 1985; Newble & Clarke, 1986). Students understand and make personal sense of the material, rather than just memorizing and reproducing (Entwistle *et al.*, 1992; Walton, 1983).

Small-group work is better than a lecture for higher-order activities, e.g. analysis, evaluation and synthesis (McKeachie, 1986). This may reflect increased motivation in small groups. Active participation, with face-to-face contact may ensure that a member seeks to understand at a deeper level.

Promotion of an adult style of learning

It is important that professionals accept personal responsibility for their own progress and direction of learning. Intellectual independence and maturity can be developed through interaction with other students (Walton, 1983). Value clarification, attitudinal change, being acknowledged as an individual, development of self-esteem, increase in self-confidence—all these can be achieved in group work. Questioning authority and using feedback from mistakes will also develop the individual's professional competence (Entwistle *et al.*, 1992).

On entering higher education, many students may appear immature and irresponsible. Yet they are expected, after graduating, to take on adult responsibilities. Knowles (1984) coined the term 'andragogy' for the development of an adult learning style. This can be encouraged by adopting small-group teaching methods. Ideally, students should eventually take responsibility, as in postgraduate education, for their own learning. Teachers may claim that the

immaturity of students impedes approaches that are student centred. However, by failing to recognize the importance of student responsibility, teachers may be fundamentally failing students. Responsibility for one's learning is difficult to achieve in a totally didactic setting. Students should be given opportunities for group learning, in conjunction with exposure to other learning strategies.

Development of transferable skills

Transferable skills are of growing importance for employees. Increasingly, they are seen as important attributes in health professionals. Transferable skills, common to the management of all patients, may include: leadership, teamwork, organization, giving support, prioritizing and setting tasks, encouragement of others, problem solving, monitoring climate, managing time. Such competences are best fostered not by direct teaching to transmit information but by teaching to encourage specific kinds of cognitive activity (Glaser, 1991).

Teamwork. Working in a group provides mutual support, laying the foundations for future teamwork (Colditz, 1980; Walton, 1983). Students can observe the effect they have on other members of the group (Walton, 1983). These experiences may influence future behaviour and strategies adopted with professional members of a team. Multiprofessional aspects of health care require team working. Ideally, in undergraduate training, students should be exposed to shared small-group learning sessions with multiprofessional team members.

Problem-solving abilities. Analysing, evaluating evidence, logical reasoning and synthesizing are encouraged in some forms of small-group work. It is hard to achieve such problem solving in the didactic lecture setting.

Communication skills. A small group encourages: explaining, listening, discussing, questioning, presenting and defending a position, giving feedback (Entwistle *et al.*, 1992). This opportunity to express oneself and listen to colleagues will increase communication skills and confidence in public speaking (Walton, 1983).

Collaborative learning. One of the most frequently cited differences between school education and the education of adults is the collaborative element (Brookfield, 1986). Small-group work allows collaboration and cooperation to be expressed and developed—not only among students but also between staff and students.

Perceived problems of learning in small groups

The introduction of small-group work into a curriculum is frequently resisted. Various arguments are used.

Students do not like small-group work

When small-group work is first introduced, students may express dissatisfaction. Though demoralizing for course organizers or curriculum developers, initial dissatisfaction with small-group work may be expected and is natural.

Self-learning shares many features with small-group work. Rae (1983) suggests five main barriers to self-learning: perceptual, cultural, emotional-motivational, intellectual, environmental.

Perceptual. The student may not perceive the value of small-group work. It is difficult to value something you have not yet experienced. These factors may influence initial views on small-group work.

Cultural. Students may be used to being told what to learn and how to learn it. They may have been taught in a highly didactic fashion. Deviation from this familiar method, irrespective of how effective that deviation may be, can cause the students concern. To compound this potential problem, the more able or vocal students may attempt to solve all the problems and this situation may be readily accepted by their less able peers (Walton, 1983).

Emotional-motivational. In small-group teaching, the student takes responsibility for his or her own learning. This change in emphasis can be painful and thus resisted. Weaker students may be dominated or discouraged by those who are more confident and articulate (Walton, 1983).

Intellectual. Students may not appreciate that learning is ongoing. Previously, emphasis may have been placed on passing assessments rather than on deep learning. The assessment method should be changed to reflect some of the key features and objectives of small-group work—otherwise this barrier may persist.

Environmental. The student's environment may discourage the adoption of some ways of learning. Teachers may inadvertently stress the importance of lectures and minimize the role of small groups. Students will quickly detect and adopt such attitudes.

Students will not explicitly articulate these five barriers. They will just report dissatisfaction. Try not to overreact against any initial negative feedback from students. Give the small-group method time to evolve. Ensure that an appropriate peer review is operational, to confirm or challenge student feedback. If information is sought, complaints will usually be equally matched by compliments.

Staff do not know how to teach in small groups

Teachers may lack the skills necessary for running small-group sessions. This is frequently seen as more of a problem by course or curriculum organizers than by staff themselves.

Frequently, the teacher desires to be seen as the font of all knowledge. A facilitator who is a content expert may inadvertently adopt a didactic style, even with the smaller number of students. Staff development programmes may help some teachers, but these are traditionally poorly attended in medical schools. Those who do attend are usually the enthusiasts. Exposing key members of faculty to examples of small-group learning can be advantageous. For the best results, visit institutions that already have established small-group methods.

For effective staff development in small-group methods, strong leaders must stipulate attendance at staff development sessions. Without such leadership, the system may have to fail before the teacher takes remedial action. Often, that remedial action is not taken and the educational strategy is merely abandoned. This is unfortunate but, until a teacher perceives that a problem exists, personal development will be minimal.

We do not have enough teachers for small-group work

Staff shortage may be a real issue—generated by the type of small-group method chosen—or may be a misconception. Method and timetabling both have a significant impact. For example, it may be very difficult to timetable a whole year's students to participate simultaneously in small-group sessions.

Des Marchais *et al.* (1992) suggest that moving from a traditional curriculum to one based mainly on small-group work (actually problem-based learning) increased the teaching commitment by 30%. Problem-based learning is only one of many possible small-group methods available. A key feature of many small-group methods is a component of self-directed independent study by students. The increase in staff commitment is often considered greater than is actually evident.

In attempting to find the required number of facilitators, the medical faculty may face a severe initial strain. To ensure that small-group work is adequately resourced, identify all higher-education funded posts and maximize the use of these resources. The importance of the teacher's time may be put in perspective if the learning received is more effective, and greater cohesion, collaboration and dedication to teaching are evident (Des Marchais *et al.*, 1992).

There are too few rooms

Space is frequently a contentious issue. Creativity is usually the best solution. Students, if actively engaged in any activity, are seldom easy to distract. Students may complain of quiet libraries but seldom of noisy libraries. Look carefully at the timetabling of sessions. Use that redundant space at the front of a lecture theatre. Try that area no one seems to use because of its open access. Do not be afraid to experiment—students are resilient.

It is a waste of time—students do not learn anything

There is still a belief that to teach a topic is to fulfil your role as a teacher. It may take longer to cover a topic in small-group work than in lectures. However, what really matters is if, and how, the students have learnt the material. In the lecture setting, there is a danger of students only learning material in a superficial and unquestioning manner. There is a seductive security for a teacher, who knows that he or she has imparted the relevant content in a lecture format. A complaint may be that "They [students] should know that, because I gave them a lecture on the topic". To teach does not mean to learn. Scheduled whole-group sessions may be more productively used in clarifying what requires to be learnt and by giving feedback on learning, rather than by encouraging student note-

taking of a lecture that may be adequately covered in a book or a handout.

Some small-group methods

A variety of methods can be used with small groups. Here, we will focus on: tutorial, seminar, snowballing, free-discussion group, problem-based learning, brainstorming, role play, games and simulations, clinical teaching. Some of these methods are in common use. Others, in less frequent use, indicate the range and potential of small-group methods.

Tutorial

Tutorials let students critically probe the subject-matter. They allow students to clarify and expand on material (Tiberius, 1990). They let teachers check the progress of, encourage and guide students (Kowalski, 1989).

In a tutorial, the group discusses material already covered or previously assigned. The teacher can assign questions for students to consider, or can ask students to read a specific passage. Tutorials may discuss topics covered earlier in lectures (Entwistle *et al.*, 1992). The following examples are taken from a tutorial on thyroid disease (Paterson, 1996).

A 20-year-old girl comes to you. She complains of nervousness, heat intolerance and has a goitre and a tachycardia. However, your partner, who has been seeing her, feels that thyrotoxicosis is extremely unlikely in view of a history of a 1-stone increase in weight over the past year. Do you agree? If so, what is your diagnosis? How would you confirm the diagnosis biochemically?

A 26-year-old clerkess complains of having had a goitre for 6 months, a tight feeling in the neck and increasing nervousness: On examination, she has a moderate-sized goitre; hands are hot and moist; pulse is 96. The diagnosis is thought to be thyrotoxicosis. She is started on carbimazole 10 mg qid. Two months later she is no better. Why did she not respond to carbimazole?

The student has a responsibility to prepare for the session and to determine which aspects require clarification. The teacher should focus entirely on work prepared by the student (Jacques, 1986). A student may be asked, or may volunteer, to answer a pre-set question or to ask his/her own question on the material received and read. After answering a pre-set question, the student may generate further questions. Student questions should dictate the session. Students should be encouraged to ask questions that they feel are important to their learning. Tutorials should never be converted into mini lectures. Try asking other students to answer some of the queries. Some students will be happy to do this, usually using terms their peers will understand. If a student's response is not accurate, try to correct this in a way that does not discourage that student from further participation.

For tutorials to work, students must take responsibility for preparing material. If some group members do not, this can be very frustrating for the teacher and other members of the group. Take care not to focus only on issues raised

by students who have not prepared for the session. Sometimes it may be difficult to distinguish an unprepared student from a student who prepared but found the material difficult.

Seminar

The seminar promotes research ability, presentation skills and critical discussion. The teacher negotiates with students a piece of work for the students to present. Ideally, the group collaboratively decides on the nature of the work for presentation and discussion (Steffens, 1989).

The task may be assigned at the beginning of a session, with time allowed for the generation of material during that session. More frequently, there are days or weeks between receiving the task and making the presentation. The level of the task will determine the time needed for preparation. If the seminar is in a self-contained session, resource material is often made available.

All students prepare the material, which is then presented to the group by one or more students. Students should be encouraged to discuss, to analyse and to evaluate critically the material presented to them. During the session, the teacher may also probe the students' understanding of the material presented.

Preparing for a presentation is one of the most effective ways to learn (Raaheim, 1991). Tiberius (1990) suggests the following guidelines for the presentation session.

- The presentations should only take a quarter to a half of the total time available.
- All students should prepare, not just the presenter.
- Adequate time must be allowed for the group to give feedback. That feedback should be a substantial part, if not the majority, of the session.

Snowballing

Snowballing allows clarification of ideas and values. It is especially useful for students and the teacher to determine the level of the students' development and understanding.

In snowballing, the teacher divides the group into pairs. The students can select their own pairing. The teacher assigns to all pairs of students prepared stimulus material on a topic or issue. This stimulus material may be verbal or, as below (Ker, 1996), offered as a written prompt.

Alan aged 34, had not been to see his GP for 10 years. He works in Stirling as an accountant and spends his weekends with his girlfriend in Aberdeen.

Recently he has had a gnawing recurrent pain in his abdomen. This wakens him at night but is relieved by eating. He smokes 30 cigarettes a day and drinks an average of 2 bottles of wine a week. He used some of his mum's aluminium hydroxide mixture. It gave him some relief, but the pain has not gone away. What questions would you ask, and why?

All pairs of students receive the same stimulus material. The pairs discuss this topic or issue. The complexity of the topic, and the time available, determines the time allocated for this stage of the session. Each pair then joins with another pair (four-person group) to compare and contrast

differences in their understanding. That group of four may then combine similarly with another group of four. The process is continued until the whole group meets to finalize deliberations in a plenary session. The teacher should facilitate the final group discussion.

Snowballing allows students to exchange views and ideas in a very direct manner. It generates ideas that are well integrated (Jacques, 1986) and will result in a lively final whole-group discussion. The initial interactions between two students are non-threatening. Their discussion as a pair will give them confidence to discuss with another pair. Covering the topic with other members of the group allows further ideas to be expressed and the introduction of new ideas or views.

Free-discussion group

Intended to foster interaction and exploration of values and feelings, the teacher introduces stimulus material which the free-discussion group discusses. That material may be given out prior to, or during, the session. The following (Preece, 1996) is an example of stimulus material.

A family practitioner rings up about a 40-year-old woman. Some 13 years before, she had an eye removed for malignant melanoma. There had been no further problems until two years ago, when she had a deposit of melanoma in the right ovary. This was removed surgically, without any evidence of other metastases or recurrence. She has recently developed neck pain. X-rays of the neck have shown degenerative tissue to which the neck pain is attributed. A chest X-ray done at the same time, with X-rays of the cervical spine, has shown that she has lung metastases. These are asymptomatic. There is no curative therapy, and no indication for palliative radiotherapy, given her lack of symptoms.

Do you tell the patient (who is highly anxious and already somewhat preoccupied with her health), or do you leave her in 'blissful ignorance'? Discuss.

The stimulus material may take any form, e.g. a brief written scenario, data, a video clip. It may be controversial or sensitive, e.g. on abortion or euthanasia. It may challenge cognitive understanding, e.g. the mechanisms or actions of drugs. Before the session, consider how long it will take to introduce the stimulus material, to discuss the topic and to summarize the learning that has taken place.

Once the teacher has introduced the material, group members discuss it. The teacher should facilitate that discussion, which should range freely within the topic area. The teacher can facilitate by asking specific and relevant questions. Finally, the teacher should summarize the discussion. Especially if a contentious issue is discussed, there need be no clear resolution.

Problem-based learning

Problem-based learning follows a simple cycle. The facilitatory role of the teacher varies with each stage of this cycle.

In medical schools, problem-based learning is relatively new. The teacher must ensure that all group members know the stages of the problem-based cycle. The teacher must also ensure that clear objectives for the small-group work are defined and understood by all group members. Problem-based learning may be described in a dedicated introductory session or seminar. Although several problem-based cycles have been described, five important stages can be considered: first meeting, introduction of the problem, self-directed study, feedback session, evaluation session.

First meeting. The group gets together for the first time and sets the scene.

Introduction of the problem. Also known as problem synthesis, in this first stage, the teacher introduces a problem to the group. Students should not see the problem until this stage. The teacher is responsible for generating a problem and making it available to the students. That problem should be prepared in advance. The following example comes from Boston, USA (Glick & Armstrong, 1996, p. 26).

Mr Royce James, a 21-year-old man with an interest in Eastern philosophy, took substantial doses of a psychoactive drug whilst seated in the lotus position. In the morning, he was found still in the lotus position on the wooden floor, his head slumped down upon his chest, breathing slowly, unarousable.

In the emergency room of a nearby hospital, a limited neurological examination revealed a young man with long hair and a sallow complexion. His pupils were reactive, his knee jerks 2 + symmetric, and plantar responses absent. Over a few hours he gradually regained full consciousness, and then complained that his legs felt heavy and he was having trouble moving them. He denied any past general medical or neurological problem.

The students then establish the learning needs raised by the problem. This is a key part of the learning. The students will identify key deficits in their understanding of the problem. All group members should find out more about all the learning needs identified. The teacher should help group members identify these learning needs. If one group member exhibits an interest in specific learning needs, he or she may be asked to report back to the group. Generally, students will identify all the relevant learning needs. If necessary, the teacher should facilitate the identification of important learning needs that have not been identified by the students. One study found that groups identified relevant learning needs that faculty had not identified. Once informed of these, faculty agreed that the issues were relevant (Dolmans *et al.*, 1993).

Self-directed study. After identifying learning needs, the students undertake self-directed research and critique of the learning needs. The teacher must ensure that adequate resources are available for the students, e.g. books, lectures, videos, patients, computer programs.

Feedback session. This follow-up session summarizes and integrates learning. The group meets to discuss the material researched. The exchange of material and its integration with the original problem may generate further learning needs. These can be similarly researched. The teacher should facilitate the exchange and the group's understanding of the material. A number of sessions may be necessary to cover all the material.

Evaluation. This stage entails generalisation and conclusions. The group makes sense of, and draws conclusions from, the material they have researched and presented. Students can evaluate how successful they have been in fulfilling their identified learning needs.

Brainstorming

If creative solutions are being sought, brainstorming is a particularly attractive technique. Free discussion by the small group promotes initiative and lateral thinking. It can break down traditional linear patterns of thinking. A topic is selected, usually by the teacher, for which solutions or strategies are considered. Brainstorming may form the first stage of a problem-based learning session, when the learning issues are identified. Brainstorming has a simple three-step sequence.

- *Generate ideas.* For example, students may be asked the different types of ways medication/drugs can be introduced into the body. The students then offer these solutions/strategies which the teacher writes on a flipchart or board.
- *Clarify ideas.* The ideas are clarified, and categorized into different areas.
- *Evaluate ideas and summarize.* The different ideas or categories are then evaluated. The merits of each are considered.

Race & Smith (1995) offer tips for brainstorming. Here are five of their best.

- *Suggest that all ideas are welcome.* One of the fundamental principles of brainstorming is 'free thought'. Especially in the early phases, no ideas should receive criticism or rebuke.
- *Allow anyone to 'pass'.* Participants should never be made to feel inferior if they have no new ideas to offer.
- *Get participants to write their ideas on Post-it notes.* These can be stuck to a flipchart (or a wall) in any order. This can be altered as the general flow of ideas changes.
- *Continue till there are no more new ideas.* Sometimes, you may feel that all the useful ideas have already been contributed. It is important to wait until all your participants have had their say. This gives them ownership over the whole range of ideas that will be explored and developed.
- *Keep the products of brainstorming in view.* For example, stick up flipchart sheets on the walls. Show that you value the results of brainstorming sessions by referring appropriately to these sheets as the session progresses. Remember—it is never too late to add further ideas to earlier flipchart sheets.

Role play

Students take on various roles and enact a scenario. Role playing is particularly valuable in exploring communication issues and attitudes. The teacher negotiates or selects which student plays which role and the teacher may also choose the scenario.

Through role playing, students encounter situations that they may go on to meet in practice. Participants act out roles in the manner expected of those roles. A recent article gives a particularly useful description of role play in clinical teaching (Steinert, 1993). Students may play their expected role in practice; they may also play the recipients of that practice. For example, in one scenario a student may play the role of a house officer asked to break bad news to a patient. In a second scenario, the same student may play the patient receiving bad news, to engender the feelings that patient experiences. An understanding of how that patient feels may help the student to relate to that patient. In the first scenario, the participant practises an activity he/she will go on to perform. In the second, the student is trying to gauge how the patient feels. Because role play allows feelings to be explored, students can rehearse and improve their performance in affective areas of medical care.

Procedure for a role play. Describe the nature of the session. Assign roles. Ensure every individual has a clear understanding of their role. Give a task to one or more of the role players. The tutor may feel that he or she should play one of the roles. Ask the students to enact an interaction. Videotape this, if possible. Later playback will allow more meaningful and constructive feedback. Not all members of the group need play a role. Some may watch the role-playing activity.

Debriefing. This is crucial for affective objectives. It is important that feedback is constructive. Generally, the person who acted a task should be asked to describe what they think went well. The facilitator and observers of the role play should highlight aspects they think were handled well. The role-play participants then describe what they would do differently, and the rest of the group also comments on what should be changed.

De-roling. Before the role-playing students leave the educational session, they must de-role. Their roles may have been emotionally highly charged. Allocate time for the students to return to their real-life roles and to offload any emotions. Some role players will easily de-role. Others may require a quiet reflective period, to dissipate the feelings associated with their roles.

Games and simulations

Because they allow a degree of experiential understanding, simulations and games are becoming increasingly popular. To ensure effective transfer of procedural skills, the best approach may be to train people on the job. The next best approach may be simulations or games that reflect the job (Tiagarajai, 1993). Participation may engender feelings that benefit, equip and empower participants (Crosby & Eastaugh, 1994).

For success in a small-group setting, the teacher must be familiar with the game or simulation procedures and the objectives. The teacher should introduce the game to the student players, if necessary explaining the rules and regulations. During the game, the teacher may also be a player or may facilitate the game. After the game, the teacher should conduct a debriefing session. This will clarify what has been achieved.

Experiential methods, such as gaming and simulation, ensure that teaching and learning are focused on the learner. They permit fine words on small-group learning to be translated into practice (Percival *et al.*, 1993).

Computer programs that simulate practice can successfully raise issues, letting participants practise a variety of scenarios. For example, the MACPAC (1996) computer program allows students to manage various patients with terminal cancer. Students can choose individually, or through group discussion, their preferred management strategies: on what information to ask for, what members of the team to involve, what drugs to prescribe. The MACPAC program is time dependent, allowing participants to see the consequences of their decisions.

Simulation and gaming are growth areas in small-group learning. Every year, a simulation and gaming yearbook is published by Kogan Page, which you may find inspirational.

Clinical teaching

Often the most familiar small-group method used by medical teachers, clinical teaching remains the cornerstone of medical teaching (McLeod & Harden, 1985). It is frequently conducted around patients' bedsides. Clinical skills centres are growing in popularity: these reproduce the clinical environment through the use of patients, simulated patients and models.

McLeod & Harden (1985) consider the group-instructional skills of clinical teachers to be the most important determinant of effective clinical teaching. The clinical teacher must also ensure there are relevant patients for the session, understand the stage of the students' education and have a clear idea of the session's objectives.

Educationists tend to differentiate objectives into three distinct areas: cognitive, psychomotor, affective (Bloom, 1956). This division is artificial. The artificial division is made only to simplify the teaching—not to simplify the task. When performing a task in practice, all three are frequently required. Clinical practice requires communication skills, perceptual skills, manual skills and management skills (Cox & Ewan, 1988). For example, to take a blood pressure: psychomotor skills are necessary in the manipulation of the cuff; cognitive skills are involved in the ability to recall the normal diastolic and systolic values; affective skills are needed for communication with the patient. Clinical teaching allows the integration of all three types of objectives.

Several models can be adopted in clinical bedside teaching. Their details are beyond the scope of this article. However, as a rule of thumb, psychomotor demonstrations should have five steps (Table 1).

In psychomotor demonstrations, student numbers involved are crucial. Every student must be able to see the

Table 1. Five steps in a psychomotor demonstration.

Activity	Example
1. Teacher demonstrates	Take a blood pressure (using a student, patient or video)
2. Teacher demonstrates and describes actions	Explanation of what is happening (may not be necessary if a video is being used)
3. Students attempt	Take a blood pressure
4. Teacher/group constructive feedback	Good points and points for improvement
5. Practice	Take blood pressure

demonstration. Various media may be used, e.g. video, patients, simulated patients, models.

The nature of the observation is one problem in demonstrating a psychomotor skill that the student is asked to observe. Students have been known to observe and to copy irrelevant mannerisms from their tutors (Tiberius, 1990). It is important to explain beforehand the essential aspects of a demonstration. Because psychomotor skills will not be acquired immediately, practice and repetition are important (Cox & Ewan, 1988).

More techniques

Many more techniques exist than are described here. For more detail on group-learning techniques, try the books by Jacques (1986) and Tiberius (1990).

Checklists for effective small-group work

The following checklists have been generated for running small-group work. The three checklists apply prior to, during and after the small-group activity. The lists will act as practical guides for teachers adopting small-group work. Although points are numbered, some may occur simultaneously rather than sequentially.

Prior to the small-group activity

(1) Consider the objectives of the session

Think: "Do I want to use small groups?"

Small groups are one of many teaching methods available. Consider carefully the objectives of the session or course you are running. Consider all the teaching methods available, e.g. lectures, small-group learning, independent learning.

(2) Determine your available physical and manpower resources

Think: "What is available?" "Who is available?"

Physical resources. Practical constraints may prohibit group work. Accommodation and resource availability may be limiting factors. Small groups require suitable accommodation, which allows chairs to be set out in a circle. This circular layout maximizes the interaction among the students. There may also be a requirement for flipcharts, overhead projectors, patients, models and such learning materials as books or computer programs. Generate a list of how many rooms you require and what equipment is needed to stock them.

Manpower. Small-group teaching invariably requires the participation of a larger number of teaching staff. Consider carefully how many teachers are available to run small-group sessions. Those teachers must also possess the expertise required of a small-group facilitator. What expertise does a facilitator require to run a small group effectively? Can floating facilitators be used? Can students facilitate their own groups?

Does a facilitator have to be an expert? One issue is the identification of appropriate teachers. Should the teacher be an expert in small-group work? Should the teacher be an expert in the content material? Should the teacher be expert in both?

Research results are unequivocal. For small groups to function effectively, the facilitator must be familiar with facilitating small groups (Barrows, 1988; Barrows & Tamblyn, 1980). Eagle *et al.* (1992) also found that it is important for tutors to be well informed about a problem and about related learning issues. Wilkerson *et al.* (1991) looked at the effect on small-group work of tutors with content expertise. They found that content experts tended to have a more directive role. They concluded that content experts may endanger one of the most important aspects of small-group work—the development of students' skills in active and self-directed learning. Silver & Wilkerson (1991) considered that content experts may have deleterious effects on collaborative learning. Content experts were found to talk too often and too long. They also provided direct answers to students' questions and suggested more topics for discussion. In problem-based learning, expert facilitators would spend more time on generating learning issues than students would on resolving them. However, using interactional analysis, Davis *et al.* (1990) showed that students' evaluations and performance were higher in groups led by content experts than in groups led by others.

Ideally, the facilitator should have expertise in content and in small-group facilitation. If this is not possible, examine closely the small-group method adopted, the objectives of the session and the facilitators available. For example, a free-discussion group's objective may be to explore the group members' opinions on euthanasia. The content is less important than the group's requirement to discuss the issue freely. A content expert may be unnecessary. However, in a tutorial, the facilitator must be a content expert or one must be available. Although an expert facilitator can encourage group members to explore issues of contention, a content expert should also be avail-

able. However, it is important that the tutorial does not become a mini lecture but that the content expert is there to clarify or address points of content error.

In problem-based learning, a content expert is usually unnecessary in the first three stages (first meeting, introduction of problem, self-directed study). The facilitator need only be familiar with the learning issues the students are expected to generate. However, a content expert should be available for the final two stages (feedback and evaluation). This division of facilitation may allow the role, and the time demands, to be shared.

Floating facilitators. Some medical schools may find it difficult to recruit and sustain enough facilitators for every group. A floating facilitator can be responsible for maintaining the task and function of more than one group. That facilitator moves from group to group.

Success varies, frequently depending on the dynamics of the groups. This technique is useful in seminars and in the second (problem introduction) stage of problem-based learning. Floating facilitators often work best after the group has already met three or four times. The technique may be used in conjunction with student facilitators.

Can a student facilitate his or her own group? It may be appropriate to have a student act as facilitator or carry out certain of the facilitator's responsibilities. Students will have identified many of the behaviours exhibited by a facilitator. The role of a student facilitator in a peer group depends on the group's dynamics, on that student's ability and on the instructional details given to the students.

Members of a group may spontaneously and unconsciously fulfil some of the facilitator's functions. In a more structured approach, each member of the group takes responsibility for one or more aspect. For example, one member of the group ensures that quiet members are involved in the activity; another takes responsibility for summarizing information. The staff facilitator should suggest this division-of-labour approach to the group, allowing members to select the function they wish to fulfil.

Gauge which students will respond to this new responsibility. You may find that many students will facilitate naturally. One student may express concern to hear other members of the group. Another may be conscious of the time available. Another may summarize information. The ability of students to act as regulators of their own group will develop with time.

(3) Determine the group size and group membership

Think: "How many students can I effectively facilitate?"

You may have little or no input when students are allocated into groups. If so, find out who did and obtain their rationale for group size and constitution. Allocation methods include: self-selection, strategically determined, randomized, alphabetical.

If you wish groups to contain a diversity and breadth of experience, do not allow students to self-select their groups. People will naturally select those who are most like

themselves. This results in focused, but unchallenged, groups.

Strategic selection, though time consuming and sometimes difficult to arrange, maximizes the benefits from small-group work. Consider factors such as: gender, nationality, experience, age. People can learn most from those least like themselves. Strategically determining groups is the best method to adopt but frequently is more time consuming and difficult to arrange.

Randomization or an alphabetical system by surname are frequently used. Their only merit is simplicity. Avoid this complacent approach.

Groups can become stale. It may be appropriate to change a group after a designated period of time. This may be semesterly or yearly. Ask the students for their thoughts on the matter.

Some teachers do not keep constant groups. They randomly change the groups, offering the students diversity and the stimulation of working with new partners. Such teachers are usually confident, and would themselves crave the variation offered by changes. Students may also argue for changes, especially if they have had little contact with other members of their year and are in the early stage of group development. Reshuffle groups, if you have clear reasons for this action. An objective of using small groups may be to improve group interaction. Regularly changing the group may be a thoughtful strategy. Remember—groups will work less productively if constantly changed, as they are less likely to reach a productive stage.

(4) Ensure that the staff are prepared for the session

Think: "Will the staff know what to do?"

Small-group methods require an understanding of facilitation. For the successful introduction of small-group work, staff development is a key feature. This is especially true if previous approaches were traditional. Staff must be given prior opportunities to see small-group work in action and to attend staff development sessions.

(5) Select the most appropriate small-group method to fulfil the objectives

Think: "Which method would be most effective?"

Small groups are not always the most appropriate method of teaching. Study the objectives of your course. Those educational objectives should determine the delivery of all sessions and the nature of assessment. Consider small groups, lectures and independent learning—then decide which method best achieves each educational objective.

If there are no practical constraints, appraise each objective carefully. Small-group methods may fulfil a range of objectives. For simplicity, the GMC separates objectives into three areas: knowledge, skills and attitudes (GMC, 1993). The terms cognitive, psychomotor and affective are frequently used as equivalents (Bloom, 1956). As mentioned earlier, in delivering health care, such objectives cannot easily be separated. In consequence, they should not be taught or learnt separately. However, it is useful to identify the objectives that you wish to be learnt.

Cognitive objectives. These include knowledge, comprehension, application, problem-solving, analysis, evaluation. Examples of cognitive objectives are: list the five major groups of therapeutic drugs in the treatment of ischaemic heart disease; compare and contrast the histology of normal arteries and arteries with atherosclerosis. Small-group methods that may fulfil such objectives include: problem-based learning; tutorial; seminar.

Psychomotor objectives. Often, these can only be taught in small groups and ideally one to one. Psychomotor objectives include: record a blood-pressure measurement; insert an intravenous line; take a blood sample. Clinical teaching is a clear example of such learning.

Affective objectives. Among these are the exploration of new relationships, the connection of emotional and intellectual concepts, the production of imaginative solutions to problems. Attitudes and communication may be aspects of affective objectives. Participation as a member of a small group may lower interpersonal barriers. Examples of such objectives include: impart bad news to a patient or relative with empathy and sympathy; inform a colleague that you consider a present line of management to be inappropriate; describe a line of management to a patient. Such objectives may be fulfilled by role playing or free-discussion groups.

(6) Develop stimulus material

Think: "What type of material will generate discussion, problem solving and creativity?"

The teacher has a responsibility to prepare for any session or course. Small-group teaching is no excuse for the facilitator to reduce preparation time. The preparation of stimulus material may include: the writing of problem-based scenarios, the production of video clips, the formulation of questions, the identification of key articles for exploration, the identification of appropriate patients. Prior reading, perhaps focused on issues, is also important. Although you are the teacher, you may not always have the answers. You should, however, know how the answers can be sought. If necessary, you should direct students to sources. Preparation may entail ensuring that learning opportunities, such as books or videotapes, are available to the student.

Your stimulus material will be determined by the small-group method you adopt. It may take three forms:

- *Material prepared before the session but which does not act as a focus for the session.* For example, this may be a series of lectures or an article. The students will not bring the work to the session. They will use the material to identify deficits in their understanding. During the session, they can discuss these deficits and seek greater understanding.
- *Material prepared for the session and acting as a focus for the session.* This may be made available in a variety of ways, e.g. a study guide (Laidlaw & Harden, 1990) or a handout. The students prepare questions on the material and bring the material to the session. Their questions may be directly focused on the material.

- *Material unseen prior to the session.* New stimulus information may be introduced to the students at the beginning of a session and during the session, e.g. a problem in problem-based learning. If new information is brought to a session, the teacher must ensure that the students understand it.

Small-group sessions around computer packages provide an example of introducing material during a session. As students work through a program, new material will be accessed when appropriate. The level of the students' understanding will determine what new material is revealed. In this way, the computer is not only introducing new material but is helping the students to learn.

(7) Inform students about course objectives and how small-group work fits in

Think: "Do the students understand the rationale for using small groups?"

Students have to understand why small groups are being adopted in the curriculum. Their role and how they relate to other activities should be clarified. If students see small-group work as peripheral, their commitment may be minimal.

During the small-group activity

(1) Allow adequate introductions—use ice-breakers if necessary

Think: "Is this group new or a previously formed group?"

Irrespective of the small-group method utilized, consider using an ice-breaker if a group is meeting for the first time. This technique is especially valuable for groups meeting only briefly.

An ice-breaker, which should not be used twice with the same group, is a brief activity that relaxes and introduces the members of the group. The normal tension and coolness between strangers is reduced. By accelerating familiarity, an ice-breaker allows greater communication and discussion within the group.

For the simplest ice-breaker, each member of the group introduces him/herself, describes their background and lists their expectations of the course. The teacher can also ask group members to write down, anonymously, any fear or concern they have about small-group work. Once these papers are collected, the teacher can share some of the concerns with the group and attempt to alleviate them. Even in large groups, there are seldom more than three or four major concerns. It may put group members at ease to know that other people share their apprehensions.

An ice-breaker is the ideal way of introducing group members to each other. You might feel that this is inappropriate or unnecessary. However, it is important that all members of the group know at least the names of the other group participants. If necessary, ensure that formal introductions are made.

Establish ground rules. Some people may feel threatened in a small group. To maximize the security of the educational climate, particularly when exploring affective objectives, suggest that members generate a list of rules. These may include:

- confidentiality is maintained, especially if patients' details are to be discussed;
- contributions are always received positively;
- members are not ridiculed or humiliated;
- only one member talks at any one time.

(2) *Ensure that the students understand what to do*

Think: "Do the students know what they are doing?"
"Do they know why?" "Do they know how they should achieve it?"

The students must know the task or purpose of the small-group session. Give them clear explanations. If you are unsure that the group understands the task, ask for clarification. Identify a time frame. The task will depend on the nature of the objectives and on the small-group method adopted. The work may be carried out in a laboratory, at the bedside, by collecting material or in a classroom discussion.

If you are satisfied that group members understand the nature of the activity or task, ensure that they all understand the small-group method. Students should appreciate the steps involved in various methods. A clear pathway should be apparent to the student.

(3) *Facilitate learning*

Think: "How should the group be maintained to achieve the task?"

The teacher, facilitator or tutor should facilitate the students' learning. The term 'teacher' fits uncomfortably into small-group work, carrying a hierarchical overtone. The facilitator's objective is to help the student become more self-reliant and independent. As a resource for learning, facilitators are better than a didactic teacher with all the answers (Brookfield, 1986). Barrows (1988) suggests that the facilitator's use of appropriate skills is the major determinant of the success of small-group methods.

A facilitator should establish a climate that is open, trustful and supportive (Eagle *et al.*, 1992). Barrows & Tamblyn (1980) consider that a good facilitator will ask students to elaborate points, will clarify why questions are asked, will probe the students' understanding of principles and concepts, will summarize and will challenge hypotheses. Wilkerson *et al.* (1991) also consider good facilitators to be those who enhance student-directed learning, and encourage students to listen, to tolerate silence and to interrupt one another infrequently. Brill (1978) describes facilitators as being in a "helping relationship".

In a professional setting, we all tend to work in small groups. However, there is seldom a facilitator to ensure the smooth running of the group. An educational facilitator's role has two distinct areas: to maintain the functioning of the group; to ensure the task is completed.

Maintenance of group functioning may include: en-

courage quiet members to contribute; ensure some members do not dominate the discussions; promote cohesion within the group; reduce tension or conflict (Jacques, 1986). Group members can be encouraged to speak by using open-ended questions. Do not ask a student: "Differentiate the pain of acute myocardial infarct from the pain of an angina attack." Rephrase it to: "Can you tell me something about the type of pain experienced during an acute myocardial infarct and the pain of an angina attack?"

To maintain the function of the group, the facilitator must observe what is happening. Reynolds (1994) suggests the following framework for observing students in a group.

- *Communication:* Who is or is not actively involved? Who talks to whom?;
- *Decision making:* Who makes decisions? How are they made?;
- *Power and influence:* What is the pattern of power? Does the power change over time?;
- *Conflict:* Are conflicts in the group resolved? How are they resolved?;
- *Ethos:* What roles and rules have developed? What values has the group demonstrated?

The facilitator's part in ensuring that the task is achieved may include: open the discussion, summarize points, clarify points, synthesize ideas, give information and opinions, question unclear contributions (Jacques, 1986).

In the early stages, group maintenance and task completion are the responsibilities of the facilitator. However, it may become appropriate to hand over these roles to members of the group. In an educational setting, a good facilitator is one who makes herself or himself redundant.

By responding to issues and situations that arise within a group, a facilitator should ensure the effective functioning of that group. All possible events cannot be predicted. The facilitator must observe what is happening, interpret those observations, analyse the problem and devise strategies to improve the functioning of the group. Such strategies improve as the facilitator becomes more experienced. Mistakes will be made. Reflect on good practice and bad practice. Devise your own guidelines for effective small-group facilitation. Remember—your actions should never jeopardize the essential characteristics of small-group work. Remember too that small groups are dynamic and will alter over time.

Group dynamics. Facilitators must understand the changing dynamics of a group. Frequently, as a group matures, its potential and effectiveness increase markedly. Some writers use a family model to describe this change in a group. Resist the temptation to use a family analogy. A family has a clear hierarchical structure, unlike an effectively functioning academic group. Tuckman (1965) suggests a group may experience four stages:

- *Forming:* an exploratory stage, where members of a group attempt to discover more about other members. This may be an awkward stage, characterized by silence.
- *Storming:* members of the group confront each other. Attempts are made to control the group. Open conflict may become evident. The accountability and responsibility of group members is an important determinant of

their effectiveness in the group—and may also be the focus for some storming (Guidi, 1995; Parsons & Drew, 1996). Students may object that group work places the onus on the mature, organized student to contribute to the session. Accountability should be taken by all members.

- *Norming*: rules, in an attempt to minimize any further conflict, are formulated for the behaviour of group members. The rules are generated by each group and may not be applicable to other groups. During this norming stage, group members conform to the formulated rules.
- *Performing*: the group focuses on the task, e.g. the students focus on achieving the learning outcomes. This is a productive period.

A fifth stage, suggested by Tuckman & Jensen (1977), is associated with group dissolution and the associated emotions. For ex-members, the group had become an integral part of the learning process. Students may express appreciation, describing how the group experience has influenced them (Walton, 1983).

For any one group, the duration of each stage may vary. For example, a group may pass through the storming stage without any outward signs. It may stay at the norming stage for several hours or for several days.

Facilitators must be aware of these stages. That knowledge will help put into perspective any discouragement or disillusionment experienced during a stage (Walton, 1983). The storming phase can be extremely painful and disruptive. However, the phase will pass. As a facilitator, you may be able to give some insight into what is happening. During the storming phase, members may ask to be assigned to another group. Resist the temptation to change members of an established group. We seldom have that luxury in real life. Also, a group with a new member would have to go through the stages again. Further, the problems observed in one group may simply be replicated in a new group. Conflict should be identified and resolved.

(4) *Debrief the group on the activity*

Think: “What has been achieved?”

Maximize learning with a debriefing session. Debriefing summarizes or clarifies what has been learnt and may take as long as the activity itself. Do not neglect this session. It may tie up any loose ends and make sense of the experience. It may also set the scene for further small-group sessions.

During debriefing, constructive feedback may be given. This is especially important for student presentations, role plays or psychomotor skills. Schofield (1983) gives guidance on constructive feedback:

- Briefly clarify matters of fact.
- The individual in question goes first, then other students, followed by the facilitator.
- Focus on the good points first—students will readily identify areas of poor practice.
- Constructive points should be established—identify points for improvement.
- Discuss disagreements.

- The learner is left with a clear summary of strengths and weaknesses.

If affective objectives have been explored, it is important to start by describing what happened—in terms of events rather than how it felt. A member of the group may relate what happened in a game or may reflect on how the group worked. This is non-threatening. It allows members of a group to start analysing their small-group experience.

Members of the group should be asked for the outcome of the group’s activity. For cognitive objectives, this may be a list of solutions for a problem. For affective objectives, it may be a description of how they felt. For psychomotor objectives, it may be the successful completion of the procedure.

After the small-group activity

(1) *Evaluate the success of the session*

Think “What happened?”

As with any teaching method, it is important to evaluate the success of the session. There are two aspects—achievement and quality. Have the objectives been achieved? This aspect may be evaluated by how successful the students’ assessment is. However, students are resilient. They may learn the material, even if the session is of low quality.

Was the educational experience of a high standard? You could ask students to complete an evaluation questionnaire. Include these four questions:

- Did you understand the objectives of the session?
- Did you find the group setting a supportive environment?
- Were you motivated to learn?
- Did you feel that the session met the objectives?

Such questions limit the evaluation. Complement them with open-ended questions and involve free-text responses:

- What did you like about the session?
- What did you dislike?
- What would you change?

Alternatively the session could be peer reviewed. In every case, you should consciously self-evaluate the session. As facilitator, you are in a prime position to evaluate group performance and development. You may use a formal or informal checklist. Acknowledge good and bad aspects of a session. Reflect on events. This will promote better practice in future. However, beware of too much evaluation. Constant evaluation may inhibit the development of the small group (Newble & Cannon, 1989).

(2) *Reflect on the experience*

Think; “How can it be improved next time?”

Evaluation, formal or informal, is pointless if no change in practice results. Competent evaluation, no matter how favourable, will always identify areas for improvement. Take time to consider what changes need be made. Also, consider the introduction of new methods or ideas. If the changes are major, perhaps you should try out your new

ideas with a small pilot study. Reflection cannot be effective in isolation. It should be ongoing, and an integral part of your teaching practice.

Conclusions

Small-group methods have a valuable role to play in undergraduate medical curricula. The student-centred focus and active participation enhance the likelihood of deep rather than surface learning. A key question currently challenging medical curricula is: "How much time should be scheduled for small-group work?" Some schools have little or no small-group work. Others adopt small-group learning as the education strategy for delivery of a curriculum. Others have a mixed approach, with small-group work one key component of the overall course.

If a medical school decides that small-group work has certain merits, it must decide what kind of small-group work to adopt. Seminars, tutorials, role-playing and problem-based learning are a few examples, as described in this article. Each method has its strengths and weaknesses. The methods must be selected to match the objectives and also the expertise of staff. Staff may be unfamiliar with certain methods. Consider addressing such deficits. It is likely that all teachers, at some time, will take part in some form of small-group teaching. This important method of learning should feature in staff development.

If small groups are used, they must be valued. If seen as peripheral, small-group work will not be accepted easily by staff or students. Whatever percentage of the curriculum is small-group based, whatever small-group method is adopted, group learning must not be seen as isolated from other aspects of the curriculum—or from the culture of the medical school. If run badly, small groups may be unpopular with staff and students. The methods may then fall into disrepute. To avoid this, staff and students must fully appreciate the process of small-group work, including its aims and intended outcomes. Success depends on good planning and effective facilitation.

Success also depends on a movement away from teacher-centred learning. In a traditional approach, teachers had the satisfaction of knowing that they had covered a subject. That students might not have learnt the material is ignored. There was an inbuilt urge for teachers to teach, rather than to allow students to learn. For a real and sustained shift in medical education, teachers must grasp the fundamental truth: students must be encouraged to learn rather than merely catching the output of teachers (Walton, 1983).

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