

Tutored Versus Tutorless Groups in Problem-Based Learning

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Small group, self-directed problem-based learning is often arranged so that a faculty tutor is a member of each group. Courses with limited faculty resources use learning groups that are tutorless. For such situations, the students are trained and empowered to manage such "processing skills" as problem solving, change management, group process, critical thinking and self-directed, interdependent learning skills. Our experience has been primarily with such tutorless groups. The processing issues have completely different priorities for tutorless groups than one encounters with tutored groups. In tutorless groups, the issues are frustration because not everyone appears to do their fair share of the work, attendance, building trust and reliability, personal differences in learning and the need to be accountable by writing reflective journals. In tutored and tutorless groups ten additional issues are listed. Suggestions are given on how to cope with each of the fifteen issues.

INTRODUCTION

Problem-based learning (PBL) is one of the most innovative developments in education in the past 30 years. In PBL, the problem drives the learning. Instead of lecturing, we give the students a problem to solve. For that problem, small groups of students identify what they know already and what they need to know, set learning goals and make learning contracts with the group members(1-4). Each student learns the knowledge independently and then returns to the group to teach others that knowledge. The group uses that knowledge to solve the problem. The group reflects and elaborates on that knowledge. In this way, students work actively and cooperatively. Two specific approaches to small group PBL are Guided Design and the McMaster Medical School approach. In Guided Design, the teacher/tutor typically works with classes of 20 to 100 divided into groups of five to six students and hence a teacher is not a member of each small groups. In our terminology, each group is *tutorless*. The teacher/tutor divides the overall task into five to twelve basic problem-solving stages and prepares typical written feedback for each stage. The typical stages are: (i) define the situation; (ii) state the goal; (iii) generate ideas; (iv) prepare a plan; and (v) take action(5). The written feedback describes typical responses, critiques these and prepares the setting for the next stage. All of this is created by the teacher ahead of time so that during a classroom session, he/she monitors the general class activity, provides the written feedback forms when groups request them and may, depending on the circumstances, provide some verbal feedback to groups. Nevertheless, the teacher, in this format, is

not always present in each group. Therefore, the decision-making is guided by a preconceived structure and developed around the stages of problem-solving or decision-making(5-7). Although the groups can be self-directed, they are guided to follow the stages and learning patterns preset by the teacher. This approach has provided an excellent approach to introduce PBL in large classes and is used in pharmacy education⁴(8-13).

In the McMaster University medical school approach, small groups work with a teacher/tutor present with each group. The task is divided into eight basic learning stages: (i) for the posed problem, explore the problem, create hypotheses, identify issues and assumptions and elaborate on the ideas in the problem; (ii) identify what you know already that is pertinent; (iii) identify what you don't know; (iv) prioritize the learning needs, set learning goals and objectives and allocate resources; individuals identify which tasks each will do; (v) individual self-study and preparation to teach others; (vi) each returns to the group, shares the new knowledge effectively so that all the group learn the information; (vii) apply the knowledge to solve the problem; and (viii) assess the new knowledge, the problem solution and the effectiveness of the process used; reflect on the process. Unlike Guided Design, no formal written feedback is prepared ahead of time for each stage. The groups are self-directed(2,14,15). A faculty tutor/teacher (who is both a subject specialist and trained in facilitation skills) is a member of each group and present during all of the group activities to monitor, assess and provide immediate input. Each group, in our terminology, is tutored. The effectiveness of this approach has been documented(16-21).

We have observed a trend, especially in medicine, nursing, pharmacy, occupational and physiotherapy, midwifery, veterinary medicine and forestry, toward the McMaster medical school approach using small group, self-directed PBL. However, resource limitations often mean that it is not

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⁴N. Popovich, personal communication, Purdue University (1995).

Table I. Prioritized processing issues for tutorless and tutored groups: Results of a survey

Dominant issues for tutorless groups	Issues for both tutored and tutorless groups
1. Apparent conflict because all members are not seen as pulling their fair share of the work	6. Students disagreement about the amount of breadth to cover; and a related problem of some preferring surface learning while others want depth.
2. Attendance	7. Addressing emotional issues brought to the problem from personal experience that tends to cloud the search for the real pertinent issues.
3. Trust and reliability	8. Quality of the critical reasoning
4. Different work goals and standards among different students which leads to conflict (such as perceived in Issue I).	9. Dominant student (regardless of background knowledge and expertise)/passive.
5. Amount of reflection, monitoring and writing they must do in the self-assessment. Empowerment means accountability.	10. Dominant student with a strong background and all others defer to him/her.
6-14. Add all the ones listed under tutored groups.	11. Emphasis on acquiring the answer to a single problem rather than integrating the subject knowledge with their basic fundamentals and rather than seeing this as a solution to a whole class of problems.
	12. Student reluctance for self and peer assessment.
	13. Failure to close discussion.
	14. Dealing with overly negative behaviors or difficult behaviors
15a. Requesting information from the tutor.	15d. Skill using resources.

possible to have a tutor with each group. A tutor may be present in the room with 10 to 20 groups, but the groups must function without a tutor sitting in as a member of each group. For example, in our pharmacy program, we have classes of 60 to 120 with one faculty member; in chemical engineering, one instructor handles classes of 30 to 60 students; and in geography and civil engineering, 30 to 70 students with one or two instructors.

Within tutored groups, tutors can lead by example. Tutors make things run more smoothly and help to ensure that the topics in the curriculum are covered. Wilkerson's(22) analysis suggests that trained tutors provide frequent feedback, question and probe the student's reasoning process, encourage the critical appraisal of information, facilitate the task of the group process, guide with the subject knowledge and facilitate and support good interpersonal relationships in the group. Indeed, much effort is spent training tutors for this role. When the tutor is not present in the group, the students in such tutorless groups need to supply these elements for the group. The students must master a larger number of processing skills such as time management, being a chairperson, planning, problem solving (in particular, getting unstuck), self-directed learning and group skills. The students must be more responsible and self-motivated because there is no one with more perceived power watching them closely.

Our experience over the past 10 years using PBL with tutorless groups has shown that processing issues encountered in tutorless groups differ greatly from those where a tutor is within each group. Although the same issues might occur in tutored groups, the issues are not the dominant ones. The purpose of this paper is to highlight the differences between tutored and tutorless groups and to offer suggestions for coping effectively with the issues.

DIFFERENT ISSUES

Over the years we have encountered with tutorless groups

about seven major difficulties. For example, students complain that other group members do not do their fair share of the work. Our colleagues in Health Sciences, who work with tutored groups, reported to us that they do not encounter this complaint. To explore the issues faced by tutors we asked experienced tutors in Health Sciences at McMaster University to prioritize in terms of frequency the issues tutors must address as they facilitate small group, self-directed PBL as tutors in groups. We then posted their structured list on the electronic, health sciences bulletin board PBLIST to gain input from others. The major respondees are listed in our acknowledgments. These issues from tutored groups are completely different from those we have encountered over the past 10 years of working with small group, self-directed PBL in tutorless groups. Some of the key differences are given in Table I. The issues are numbered purposefully. The first five issues are commonly encountered in tutorless groups; both tutored and tutorless groups have to address issues six through fourteen. Issue 15, concerning the use of resources, could be present for both but has interesting overtones for tutorless groups. From our survey, none of the tutors in tutored groups had to address the first five issues. Indeed, they were surprised these were even issues.

CONTEXT

Our suggestions are based on two general premises: (i) if you value a skill, make it an objective, gather evidence about its acquisition and assess it; and (ii) make the implicit explicit. For tutorless groups, we want the students to develop skills to address all 15 of the issues listed in Table I. We value the skill; we want to develop the student's confidence in the skill and so we want to empower the students with the skill. That empowerment is coupled with accountability. This naturally leads to the second premise, we need to make the implicit explicit by:

- including the skill in the course outline and learning

objectives; for example, in this course you will develop chairperson skill;

- providing support for skill development and providing opportunities for practice; for example, giving the students an opportunity to try the skill in a trustful environment, providing gentle feedback about the performance, giving research evidence about what target skills and behaviors should look like and then giving the students formal opportunities to practice and get feedback;
- developing ways to assess the skills; for example, on a written examination, students will be expected to write out how they would, as chairperson, respond to a given scenario or they will be asked to create an agenda for a specific meeting;
- assigning a grade or a component in the assessment for the acquisition of the skill; for example, the final mark is 50 percent on the subject knowledge and 50 percent on the process skills. The percentage selected depends on the relative emphasis placed on the skill development.
- providing many opportunities for the students to present evidence showing achievement; for example, in a semester, each has at least three opportunities to be chair for different types of meetings; each person is required to chair a goal setting meeting, a teach meeting and a feedback meeting;⁵
- assessing the evidence relative to the goals, objectives and criteria; for example, after each meeting, the chair receives completed feedback forms from all group members. He/she then uses this evidence to write a reflective report assessing the degree to which the evidence supports claims of accomplishment about the goals for chairperson skill development. Examples of feedback forms and of student reflective journals are available(23,24).
- giving constructive feedback to the students; for example, each student receives feedback about performance from peers immediately after the performance and feedback about his/her reflective journal from the faculty.

This has been done in varying degrees in our courses in pharmacy, chemical and civil engineering and geography.

Assessing these skills is a challenge. All we can see is usually the product and the behavior — most of the skills cannot be seen easily. We can ask them to do specific tasks that will make the skill more observable. We can structure the task so that it becomes more apparent when and what types are skills are used. Students need training in the skills so that they can better display the skills and assess if and when difficulties occur. Guided design, for example, makes the problem solving process more visible. In group processes, students can be assigned roles of chair/facilitator, recorder, reflector/assessor and planner. After one or two complete rotations using challenging problems, each will have a good understanding of the role and a list of strengths and areas to work on. For example, at the end of each task, peers can complete feedback forms(23) that are used as evidence for writing the reflective journal(24).

SUGGESTIONS FOR ISSUES ARISING IN TUTORLESS GROUPS

1. Fair Share of the Workload

Student dissatisfaction occurs quickly if anyone per-

ceives that others are not doing their fair share. Some options for dealing with this include:

- form groups based on equal student commitment. Each completes a commitment chart(1) that indicates personal priority and hours willing to devote to this particular PBL activity. Then, either ask students to form groups with similar commitment or assign. This approach seems to work well if you have many students trying to retain scholarships or if the class has a history of complaining about equal workload.
- form groups on another basis, such as: students randomly assigned by the instructor; students assigned based on surface versus deep learning preference; students selected because of convenience in meeting together outside of class.

From our experience, the method used depends on your knowledge of the class. For example, if several students who have a history of complaining about unequal workload are assigned to a group, then in early meetings, while the groups are establishing norms, request that the group openly talk about equal commitment as an issue. As another example, some students assume that they will be able to hide within the group their personal unwillingness to participate fully. Cultivate an open, trustful relationship so that these issues surface early in the group's development. This allows the group to make an appropriate intervention early. Some other options include:

- make the individual contributions visible and give each student a chance to assess each other's contribution. For example, in a laboratory course, we want to develop project management skills. Hence, we assign a student to be a job captain for each laboratory. Her/his role is to plan the laboratory, ensure that all instruments are calibrated and all supplies are on hand, and identify roles each will perform during the laboratory. Some do the job well; others do it poorly. If all that is done is to assign the role without accountability, then this remains a good intention and the students are frustrated because others don't do their fair share. This all changes if the assessment includes 15 percent of the grade for the course is given for the role of job captain. To provide evidence about the role of job captain, at the end of the laboratory, each student in the laboratory team completes the job captain feedback form.⁶ Each student then reviews the forms he/she receives and writes a one-page assessment of how the task was done and of how to improve. This assessment is graded by the instructor based on consistency of the assessment with the evidence and the improvement made over successive times of being job captain.
- teach skill in handling conflict. For example, we run three to six hour workshops on conflict and conflict resolution. Timing sheets and transparencies listing the activities are available(24).
- facilitate a group discussion of norms for the group and include fair share of the workload as one of the issues. For example, we ask groups to spend two hours deciding on their norms on 15 issues related to norms, such as how to handle emergencies, combatting "group think."

⁵A loan copy of a videotape showing students in these three meetings (goals, teach and feedback) is available from DRW(25).

⁶Copies of the feedback forms, example learning contracts, issues for norms and issues to deal with free riders are available from DRW.

Some options the instructor and the students could take to deal with unequal commitment within a group include: (i) clarify the student's individual perceptions of their commitment to the course; (ii) clarify the relative importance of the content and the processing skills; (iii) identify personal preference for independent learning compared with interdependent learning; (iv) make contributions visible so that individuals cannot hide within the group; and (v) help them adapt the attitude that constructive "conflict" aids the learning and the growth of the group. Other suggestions are given for tutors in tutored groups by Tiberius(26), Fisher *et al.*(27) and Sampson and Marthas(28). These can often be adapted by the instructor for tutorless groups. Whichever route is taken, all should be clear about the options and consequences right from the beginning.

2. Attendance

Attendance is critical if small group PBL is to succeed. The group is very frustrated if a member is not present in the "teach meeting" where all students return to teach each other what they have researched. Here all depend on the person's input. In a tutorless group, extensive, up-front work is required to build individual accountability to the group and to create a fair environment that encourages and nurtures attendance. A student who habitually misses meetings should be required to withdraw from his/her home group. Membership in any group has its responsibilities. The issues for dealing with poor attendance are: (i) how to monitor attendance and participation; (ii) how to decide when to intercede; (iii) how to create options so that the tardy student can progress; and (iv) who should intercede, the instructor or the group.

One approach, used for ten years in the Chemical Engineering program, has been to identify self-directed learning skill and the subject knowledge learned as equally valid and equally assessed objectives of PBL. Thus, there is a mark or grade for the acquisition of self-directed, interdependent group skills and a mark for engineering economics, that is, the subject knowledge being learned. Both have equal weight because both are equally valued outcomes for the course. The ground rules established the first day are that attendance is required by each member of the group. If some do not attend, the professor will, at either the request of the group or with the permission from the group, inform the tardy student in writing that he/she has failed the self-directed, interdependent learning portion of the curriculum and may learn the subject knowledge as an independent learner or may negotiate with his/her former group for readmittance. As Draconian as it sounds, it works well. Over the years, with classes of 30 to 50, each year usually about 10 percent of the students do not attend. About two, over all the years, have selected independent study. When this instructor-intervention occurs (regardless of whether the student elects to self-study or to negotiate for readmission to the group), there is a marked improvement in attendance and commitment from all of the groups but especially with the group that has been most closely affected.

Attendance and contribution can also be monitored if each student submits brief reflective assessment of the feedback forms he/she has received. For example, for each group meeting, individuals can complete feedback forms related to the skill under consideration. The recipient of the set of forms uses these as the evidence for his/her reflective journal that is submitted periodically throughout the course.

If the journal contains only four forms for a five-person group, one person was missing. Monitoring and follow-up by the instructor with that particular group is welcomed by the group. This is particularly so if the group is meeting outside of regular class meeting times when it is not possible for the instructor to note attendance.

3. Trust and Reliability

The first two issues, fair share and attendance, affect trust and reliability. If the first two issues have been handled reasonably well, then trust can be developed primarily through the effective use of learning contracts. The more formal contracts suggested by Knowles(3) can be used. In these formal contracts students write out the learning goals, the resources to be consulted, the criteria to be used to decide if the goal is achieved and the forms of evidence to be used. Alternatively, students can create their own contract forms⁶. In our experience, the informal contracts that the students create are effective and preferred by the students. Trust is further developed if students see their commitment to the group as being so strong that they make special arrangements with the group when circumstances dictate. For example, a student had a job interview at a time that conflicted with the group meeting time. She received written permission from the group.

Trust is fostered by helping the students get to know each other and getting them to agree about their mission and goals. Workshops based on mission and goals can be built around Covey's(29) principles. For example, students could share a personal mission statement with the group and then collaborate to write a mission for the group. Johnson and Johnson(30) also offer suggestions and a feedback form to be used to monitor the development of trust. In our experience, both have been effective.

If individuals compete with each other in a PBL course (and/or in other concurrent courses) trust will be hard to develop. To some extent, competitiveness is related to the method of assessment used. If students receive an individual mark for their work, then they tend to compete unless we astutely change the environment. For this reason, some programs use a pass/fail mark. In our experience, we mark the reflective journals and hold students accountable for using the feedback evidence from peers to substantiate claims of accomplishment. Suggestions on how to have individual accountability and marks together with cooperation and trust are given by Johnson, Johnson and Smith(31). Tiberius(26) suggests that trust is built if the students perceive that all want the group to succeed and all are dependable and consistent. His other suggestions refer mainly to actions the instructor can take.

4. Personal Differences in Learning

Much of the apparent conflict within groups occurs because of personal preferences. One approach is to help individuals develop a sense of their preferences through questionnaires. Jungian typology(32), Lancaster Approaches to Study Questionnaire (LASQ)(33,34) and Perry's model(1) have been most effective for us in helping students identify and value their own preference and those of others. This information helps in coping with conflict and in learning and teaching each other. For group processing, FIRO-B(35) provides insight about a group as it progresses through the forming, storming, norming and performing stages. Our approach is to have a two-hour workshop in which the

Table II. Coping with conflict creatively: Scenarios for nursing students in PBL

Scenarios	W	A	C	N	F
<p><i>Scenario 1: Time:</i> At the end of the time allotted for this problem; Trust: moderate from your perspective; Goals: you feel strongly that you really must know the fundamentals in depth because professional practice is changing so rapidly.</p> <p>You explain, "For this problem I don't think I understand the basic principles. I know what to do but I don't really understand why! I want to learn more of the underlying fundamentals."</p> <p>Elaine explains patiently. "But we know enough; we know what to do and we know the three top reasons why. This case is finished. Besides, we've spent our allotted time on this case."</p> <p>"Yeah, don't you know the principle of optimum sloppiness? We learn these ideas gradually. You can't learn everything all from one case." added Michelle.</p> <p>"But, if we can only meet on Saturday for three more hours we'd be able to really know why," you suggest.</p> <p>"Sorry, can't," say four voices simultaneously. How do you respond?</p>					

W=Withdraw; A= Accommodate; C= Compromise; N=Negotiate; F=Force.

students complete the inventories and have activities that confirm the implications of the scores. Some resources are given in Chapters 1 and 5 of Woods(1) and by Quenk(36).

5. Writing Reflective Journals

Without assessment of the processing skills, students are unable to make claims about how much skill in lifetime learning, group processing, change management, problem solving or self-assessment they have acquired. The use of appropriate feedback forms, together with their own reflective comments, provide ample evidence of accomplishment. We recommend that the form ask students to identify strengths and areas for improvement (AFI) for the individual. Listing the strengths softens the blow while building self confidence and mutual esteem. Students tend to be negative rather than supportive and constructive. The AFI can form the basis for explicit skill-improvement plans. Examples of forms are given by Woods(1,23). The challenge is that writing journals takes student time. We rationalize the need for such journal writing because documentation is needed for assessment of the learning now in the PBL activities and, in the future, by professionals to document for the sake of evidence in the face of a litigious society. We assess the journals on the student's objectivity in using the feedback evidence from peers to substantiate claims of accomplishment and on the degree to which the student has developed the target skill.

SUGGESTIONS FOR ISSUES ARISING IN BOTH TUTORLED AND TUTORLESS GROUPS

In tutored groups, traditionally the tutor is expected to facilitate the group process and unobtrusively help the students set goals, prioritize issues, think critically and become effective lifetime learners(22). Since the authors all work with tutorless groups, and since we do encounter these issues (in addition to the first five) we offer some ideas on how we address these in tutorless groups. Perhaps, these might be useful in tutor training programs.

6. Breadth/Depth

Being able to astutely select just the right amount of depth to be learned on all the major issues posed by a case

is probably the greatest challenge for the students. They tend to consider the first problem as the sole source for learning all there is to know about a given subject. They need to have open reassurance that the subject is being built up gradually from case to case. They need to apply two key principles: the principles of optimum sloppiness, and successive approximation(1). The former says that the resource and time limitations force us to extract the key issues in the time available. We need to learn to be sloppy, to accept a starting overview. The latter suggests that we start with the simplest overview and gradually build up depth and complexity. We can further develop this by requiring that the tutor/instructor monitor the objectives and issues during the goal setting meetings. This requires that the students commit to paper their goals and priorities. In tutorless groups, the group's objectives are taken to the instructor who checks that all the issues have been identified. This helps closure (Issue 12) and clarifies assessment.

Related to this issue of depth versus breadth is the student's personal preference. Students with what Ramsden(33) calls a reproducing orientation prefer to memorize and to let the curriculum be dictated by the tutor. They probably prefer breadth. On the other hand, students with a meaning orientation probably search for depth. We use the LASQ questionnaire to identify probable preferences and ask students to discuss the implications in terms of the type of goals to be set and the type of information to be brought back to teach the group. Furthermore, since differences about depth versus breadth may raise conflict among the group, we have presented brief workshops to the students on coping effectively with conflict. We create scenarios that simulate PBL situations. Students are asked to role-play the situation and decide from among five options for dealing with the conflict: withdraw (W), accommodate (A), compromise (C), negotiate (N) and force (F). For each situation we try to note the key features that influence the choice of response. These include the amount of time available, the amount of trust developed within the group, the student's personal goals for the group, and the context. Table II gives an example of scenario created for nursing students to raise issues of breadth versus depth.

7. Emotional Issues

A student may find that the problem is similar to one experienced in his/her family. As a result, he/she becomes emotionally involved in the case and reads into the case specifics from his/her experience that may, or may not, be intended as dominant learning issues. Such emotional issues occur primarily in the health care/pharmacy PBL activities. To handle this, the group can address this during the goal-setting task, by including how to handle emotional issues when they are establishing norms, by using group reflection after each meeting,⁷ by asking a person to play the role of reflector (whose role is to bring to the group's attention any counterproductive emotional issues) and by including this as a scenario in workshops on conflict resolution. We have used all of these methods. Our theme is to anticipate that this might occur and prepare the students to handle it effectively.

8. Critical Reasoning

Often the students do not critique the learning sources; they do not think critically. Barrows and Tamblyn(2) and Paul(37) are excellent sources of questions to use to probe critical thinking. We can encourage the tutor to ask these questions or we can empower the group to assume this responsibility. One approach would be to give each group an example list of questions and ask them to ask these questions of themselves as the meeting progresses. Another option is to assign one person in the group the role of validator whose role is to ask these probing questions to promote critical thinking. Create a form to allow all group members to give feedback to the person playing the validator role. Ask each to complete the form at the end of a group meeting. The role player then writes a one-page reflective analysis based on the feedback forms as evidence. If groups have identified similar learning issues, another option is for groups to circulate their reports to other groups for critical appraisal.

9. Dominance/Passiveness

Sometimes one individual will dominate the discussion whether they have anything to say or not; whether they have expertise or not. This, along with silent members, those giving emotional outbursts and those displaying deviations from expected group norms, is addressed in such resources as Tiberius(26), Fisher *et al.*(27) and Sampson and Marthas(28). For dominance, all recommend that we interrupt and get the attention of the individual. Dominance can be managed by having a clear agenda and an agreed-upon time schedule. For tutorless groups, we assign the role of chairperson well in advance so that the chairperson can prepare and circulate an agenda. The chairperson also monitors the task and morale components and intervenes as needed. The first part of the team meeting is spent confirming the plan for the meeting. Such actions create a framework that helps groups address these issues. Furthermore, if the group meeting closes with a process assessment (described in Issue 7 above) then all realize that each will be

⁷ Ideally, at the end of the meeting, the group will assess the process used by considering three dimensions of the group process: a group discussion of the quality of the task and morale components of the group process, individual reporting of the contributions each felt he/she made, and finally a group listing of the five strengths and the two areas on which to work. We use a general pattern of three, two, three minutes to complete these reflections. Usually, if one brought excessive emotional issues into the discussion, this will be addressed during this time.

expected to identify what they contributed to the meeting. This helps to create an environment where all are expected to contribute. An explicit method is the talking stick or rounds approach. Each individual has a chance to have his/her say for a given length of time. Ideas cannot be repeated once they have been recorded unless something new can be added. The group or tutor enforces this guideline. The instructor does this by monitoring the elapsed time and announcing the time when the next person is to speak.

10. Background expertise

Background expertise is a challenging issue. Groups can be formed based on a mix of background experience. Group members must clearly distinguish between the role of group chairperson (who is a facilitator of the group process) and leader (who, at one particular time, has the most expertise on a subject). Leadership shifts among the members(1). We strongly encourage groups to appoint student chairpersons, especially for tutored groups. Otherwise the tutor often de facto is assumed to be the chairperson.

Students bring a rich set of personal experiences to each group. This is perhaps more obvious when, for example, post RNs are members of a PBL group in nursing. However, sometimes, persons with background experience confuse that for expertise and use that experience to misdirect the group. Many options can be used to monitor/control persons who use their background experience to try to direct the group, in particular when the group is identifying pertinent learning issues. Use a validator, as described in Issue 8, to ask critical thinking questions to broaden the perspectives. Use the tutor/instructor to critique written goals and objectives, as described in Issue 6 above. Some of the suggestions given in the preceding section on dominance might be useful. Run a workshop on conflict resolution and use this explicitly as a vehicle for discussion, as described in Issue 6.

11. Answer versus Solutions

Sometimes students close with an answer to a single problem and fail to see the fundamentals and new knowledge learned as the solutions for a variety of problems. Elaboration about the problem is essential. Early closure and unwillingness to explore and elaborate are particularly true for professionals who have experience, but not necessarily expertise. This is closely linked with the previous Issue 10 on background expertise. An option to try to facilitate elaboration and exploration is to ask each group to pose a problem based on the same fundamental principles and distribute that problem to another group for discussion(25). Alternatively, the validator (described in Issue 8) could be used to enrich discussion of the implications and consequences that occur from a problem that has just been solved.

Similar analysis, reflection and extension should be done to help improve the process used for solving the problem. Barrows and Tamblyn(2) offer an example set of reflective questions. For tutorless groups, we use journal writing to achieve the same purpose.

12. Self-Assessment

Assessment is probably the most contentious issue in professional life. Few are comfortable doing performance reviews; yet each professional will be expected to assess, reward or fire colleagues. In learning, whoever owns the assessment, owns the learning. The challenge in PBL is to

help students become comfortable with assessment of themselves, of others and with the assessment process. Details of the issues and how we have tried to handle self-assessment are described elsewhere(1,23,24,38,39). In general, we suggest that the process be made explicit, that some training be given to the students about their misconceptions and attitudes toward assessment. Explicit training can be given on how to give and receive feedback. For example, the principles of giving and receiving feedback can be outlined, then ask the class to form triads. The three roles in the triad are: (i) giving feedback; (ii)receiving feedback; and (iii)observer. Each has a chance to play each role and to get feedback from the observer. This has worked well for us.

13. Lack of Closure

Lack of closure could occur because the goals are unclear, there is endless discussion, lack of knowledge or perhaps because of lack of confidence in decision-making. Tiberius(26), and Fisher *et al.*(27) give good practical suggestions of how to clarify the goals. Once the goals are clear, groups still can fail to close on the issues, on the answer or on conflict or group processing skills because of insufficient confidence or skill in the group process. Primarily the chairperson should facilitate closure. Details with practical suggestions we have used are available(1,23).

Tutorless groups may also tend to procrastinate, especially if a test is coming up in another course. Here is where the instructor needs to assign and adhere to milestones throughout the unit. Students, in this situation, will commonly try to shift the blame to the instructor; ask for extensions, extra time or lower standards. Maintain your standards; remind them of the earlier commitments to the milestones. Use these methods early in the PBL course so that the students are clear about your standards and expectations.

14. Negative Behavior

Negative behavior is but one of many difficult behaviors that can disrupt the group process. The one identified by our respondents was the wet blanket or negative behavior where the person has only negative comments to say about everything. For example, "That won't work!" "That's not pertinent." "How can you be so dumb!" If negative behavior or other equally taxing behaviors are shown consistently that violate the norms of group behavior, then, the general strategy is to change the group's attitude. You can't change the person with the difficult behavior(1,40-43), but you can change the group's response to that person. Brinkman and Kirschner(40) offer practical advice for handling each type of difficult behavior, including negative behavior. We have found that openly talking about the group process, the strengths and uniqueness each person brings and how to cope with conflict are extremely helpful strategies to empower the students with the confidence and skill needed in their current PBL groups and in their professional life.

15. Skill in Using Resources

Students may not know how to search the literature or to use the library effectively. We supply explicit training. One approach is to use library treasure hunts. Here, teams of students are given a list of topics or questions and the challenge is to locate all the information before other groups.

A challenge we find with tutorless groups is that the

students rarely use the tutor/instructor as a resource. Indeed, the students try hard to show that they can do it without any help. By explicitly talking about this with the students, this difficulty can be overcome.

CONCLUSIONS

Processing issues have completely different priorities in tutored versus tutorless groups. For example, attendance and students complaining that others do not do their fair share are dominant issues in tutorless groups. Our data suggests that they do not appear as issues in tutored groups.

In tutored groups, the tutor is seen as supplying the necessary processing skills to help the group succeed. In tutorless groups, efforts should be made to empower the students to solve any processing problems they encounter. The tactics for dealing with any of the issues are similar. The difference between tutored versus tutorless groups is in *who* learns and applies the tactics. In tutored groups, the emphasis is on training the tutors. In tutorless groups, the emphasis is on training the students. For the students, the training includes creating visibility for the issues and providing assessment and feedback to monitor and nurture personal growth. The main approach for dealing with the issues in either context is to validate the skill as one worthy of acquisition.

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