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Framing Collaborative Behaviors: Listening and Speaking in Problem-based Learning

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Abstract

PBL is described as small-group collaborative learning; however, literature on how collaboration is enacted in PBL contexts is limited. A two-year ethnographic study examined the experiences and responses of Asian students to the obligations of PBL in a Western context. Participant-observation, videotape data, and video-stimulated recall interviews provided insights into collaborative behaviors in PBL classrooms. Even though students recognized that listening and speaking were important to collaboration, speaking was clearly privileged over listening in this PBL setting. A framework was developed that incorporated both collaborative and noncollaborative listening and speaking behaviors. This Collaborative Listening/Speaking (CLS) framework provides a structure for tutors to scaffold the novice learners' collaborative skills, and therefore more effectively facilitate the group's learning through collaboration.

Keywords: collaboration, learning, ethnographic, listening, speaking

Introduction

Small-group collaborative learning is a fundamental component of the problem-based learning (PBL) approach (Barrows & Tamblyn, 1980; Savery, 2006). In the context of PBL, collaborative learning has been described as "the process by which individuals, working from different perspectives, come to an understanding of rich, complex concepts" (Kelson & Distlehorst, 2000, p. 172). The collaborative nature of PBL is mentioned as a

central learning device in most articles describing PBL or its implementation in different teaching contexts (Amos, 1998; Patel, Arocha, Branch, & Karlin, 2004; Tanenbaum & Tilson, 1998); however, only limited commentary describes how students engage in the collaborative process or how students view the constraints and affordances to its enactment.

In PBL tutorials, collaboration is both a *learning process* and a *learning outcome*; that is, students are expected to learn through the elaboration and sharing of knowledge as well as to develop collaborative skills for future practice as “team-players” (Amos, 1998). The value of learning through the elaboration of knowledge has been discussed previously in the literature (Abrandt Dahlgren & Dahlgren, 2002; Bridges & Hallinger, 1993; Moust et al., 1987). Further, the opportunity to share a large workload, learn from multiple perspectives, distribute the cognitive load, negotiate shared understanding, develop social skills, and function as a content expert for a group of peers have all been identified as advantages to learning through collaboration (Nelson, 1999; Hmelo-Silver & Barrows, 2006; Schuh & Busey, 2001). Students are encouraged to apply, analyze, synthesize, and evaluate material and to build their critical thinking skills as a team (Tanenbaum & Tilson, 1998). The individuals in the group therefore work toward three common goals in PBL: “learning collaboratively, problem-solving collaboratively, and achieving individual curricular outcomes collaboratively” (Kelson & Distlehorst, 2000, p. 171).

In PBL tutorials each group member is obliged to participate by sharing their knowledge, reasoning, and research (Azer, 2001). As a result of increased and more diverse input, group members are exposed to multiple perspectives and expertize. Tanenbaum and Tilson (1998) suggested that the more novice the learner, the more likely he or she is to reach and settle for simple, unsubstantiated conclusions. However, exposing these novices to multiple views provides opportunities for ideas to be extended and challenged. As the group members focus on resolving the problem, they “can collectively enlighten each other regarding multiple perspectives, complex affordances, and reasonable versus reckless uncertainty” (Kelson & Distlehorst, 2000, p. 176). As a result, the group working together has more potential for deeper understandings than is available to individuals working alone through the hypothetico-deductive reasoning process of PBL. When the group functions as a “dynamic whole ... a change in the state (of knowledge) of any member or subgroup changes the state (of knowledge) of all members or subgroups” (Smith, Sheppard, Johnson, & Johnson, 2005, p. 5).

The role of the PBL tutor in facilitating students’ skill development is well documented (Maudsley, 2003; McLoda, 2006; Neville, 1999). It is the tutors’ role to scaffold collaborative skills and to facilitate effective group negotiation of the collaborative process. Despite identifying the need for tutors to facilitate the development of teamwork skills “just as purposively and precisely as academic skills” (Smith et al., 2005, p. 9), the litera-

ture provides little guidance on which specific behaviors need to be scaffolded to promote ideal collaborative practice.

The degree to which classroom practice actually matches the idealized version of collaboration commonly described in the literature (Kelson & Distlehorst, 2000; Nelson, 1999) is in question. Evidence shows that PBL is enacted differently in different cultural contexts (Dixon, Lam, Lam, & Ho, 1997; Khoo, 2003) and that students bring with them different learning approaches and behavioral preferences to culturally diverse PBL classrooms (Hawthorne, Minas, & Singh, 2004; Imafuku, 2006; Woodward-Kron & Remedios, 2007). For example, students may remain silent while waiting to be guided by the tutor in a manner consistent with teacher-centered educational models they are familiar with from previous classroom experiences. Another risk is that students experienced with competitive learning environments will come to view small-group work as competition to speak, with *quantity* of verbal participation potentially overshadowing *quality* of contribution. To assist the novice to develop collaborative skills, tutors need a clear understanding of the behaviors they are working to facilitate.

This paper presents a Collaborative Listening/Speaking (CLS) framework for examining collaborative behaviors that foreground both the listening and speaking components of collaboration, with a closer examination of the types of listening and speech acts that are viewed as collaborative. This framework was developed as part of a longitudinal study that examined the experiences and responses of Asian students to PBL in a Western (Australian) learning context. Although the focus of the ethnographic study was on the experience of Asian students, the framework itself is a model that can be used to facilitate the collaborative skill development of students in a variety of PBL tutorial contexts.

The Research Content

A two-year ethnographic study was conducted at a School of Physiotherapy at a large Australian metropolitan university. Typically 100 students are enrolled in the first year of this physiotherapy undergraduate program. Some heterogeneity is present in the first-year cohort of students with respect to age, cultural background, gender, and previous academic experience. Nonetheless, the typical student is Australian born, English speaking, and 18–20 years old. International students are commonly from Asian, Confucius-heritage countries such as Singapore and Malaysia, and make up 10 to 20 percent of the first-year student enrollment.

The school chose to adopt a hybrid PBL system to present its curriculum in 1999, combining traditional lectures, practical classes, and PBL tutorials. Each PBL problem represents 5 hours of group work conducted over two weeks. Tutors facilitate two 2-hour sessions, and students meet independently for 1 hour between these two sessions

to discuss the progress of their research and their understanding of the problem. Each group typically consist of 10 students and is structured to represent diversity in terms of age, gender, previous academic experiences, and cultural background. All tutors are physiotherapists who have undergone tutor training and who have attended regular, weekly, 1-hour PBL meetings to discuss both content and process issues as they arise.

Methodology

Thirteen Asian (see Table 1) and 17 Australian (see Table 2) students participated in the research. This research project focused on the experiences of the Asian students, using the data from the local students to inform understanding of the major similarities and differences in learning experiences and responses. The Asian students represented a diversity of countries, cultures, and language backgrounds from Southeast and East Asia. Recent classroom research found substantially different approaches to teaching and learning between different Confucius-heritage countries (Clarke et al., 2006) and it should be recognized that the 13 Asian students represented diversity in terms of culture, personality, and previous learning experiences. None of the students in the first-year cohort had experienced PBL previously. Although local students were familiar with small-group work in classrooms, 12 of the 13 Asian students had no previous experiences with small-group collaborative learning.

Table 1

Demographic data on Asian students.

	Name	Gender	Age	Country/City of Birth and Education	Language(s) Spoken at Home
1	ChulSoo	Male	32	Korea, Seoul	Korean
2	Sun Li	Female	20	Malaysia, Kuala Lumpur	Cantonese & Hokkien
3	Linda	Female	20	Singapore	Mandarin
4	Vivien	Female	20	Singapore	Mandarin & English
5	Sonia	Female	19	Hong Kong	Cantonese
6	Adam	Male	19	Taiwan	Mandarin
7	Lilin	Female	18	Singapore	English
8	Sue Mee	Female	20	Singapore	Mandarin & English
9	Jody	Female	20	Singapore	English & Cantonese
10	Lin	Female	20	Singapore	Mandarin & English

	Name	Gender	Age	Country/City of Birth and Education	Language(s) Spoken at Home
11	Desmond	Male	23	Singapore	Mandarin
12	Prue	Female	19	Japan, Tokyo	Japanese
13	Grace	Female	25	Hong Kong, migrated to Canada, Edmonton	English

Male: 3, Female: 10

Age range: 18 to 32 years

Table 2

Demographic data on local Australian students.

	Name	Gender	Age	Country/City of Birth and Education	Language(s) Spoken at Home
1	Kris	Female	18	Born Vietnam, Pre-tertiary education Australia	Vietnamese
2	Janice	Female	19	Australia	Vietnamese
3	Tri	Male	19	Australia	Vietnamese
4	Uthara	Female	18	Sri Lanka	Singhalese / English
5	Sarah	Female	19	Rural Australia	English
6	Catherine	Female	18	Rural Australia	English
7	Casey	Female	19	Rural Australia	English
8	Jay	Male	18	Rural Australia	English
9	Jordan	Male	20	Rural Australia	English
10	Andrew	Male	19	Metropolitan Australia	English
11	David	Male	19	Metropolitan Australia	English
12	Carla	Female	18	Metropolitan Australia	English
13	Leah	Female	18	Metropolitan Australia	English
14	Stephanie	Female	22	Metropolitan Australia	English
15	Eleanor	Female	28	Metropolitan Australia	English
16	Laura	Female	18	Metropolitan Australia	English
17	Ellie	Female	20	Metropolitan Australia	English

Male: 5, Female: 11

Age range: 18 to 28 years

Consistent with an ethnographic approach (Massey & Walford, 1998), data collection included two years of participant observation during PBL tutorials, PBL tutor-training sessions, and tutor meetings. Data also included 30 semi-structured interviews, 65 video-stimulated recall interviews (Clarke, 1998), and videotape data of 42 PBL tutorials in the students' first year of study. Table 3 outlines the data collected over the two-year period. A constructivist grounded theory approach (Charmaz, 2003) was adopted as a way of searching empirical data for emergent themes and ideas grounded in students' experiences and social practices. The researchers' intention in adopting this approach was to avoid superimposing existing theory and preconceived notions of how students should "do" PBL and instead explore students' own hierarchy of concerns within the obligations of PBL practice. Data were collected in the second semester (second half of the year), on the assumption that by the second semester, students would have developed familiarity with the PBL process and would have established a routine in how they engaged with the obligations of PBL practice.

Table 3*Data collected during the two years of study.*

Year 1	Year 2	Total data sets
Weekly PBL sessions, Two-day tutor training and fortnightly tutor meeting	Weekly PBL sessions, One-day tutor training and fortnightly tutor meetings	2 years participant observation, field notes
Single Semi-structured Interviews		
6 Asian students 6 × 1 interview	7 Asian students 17 local students 24 × 1 interview	30 semi-structured interviews
Videotape of PBL Sessions		
6 PBL groups 6 groups × 4 sessions 24 PBL sessions	9 PBL groups 9 groups × 2 sessions 18 PBL sessions	Video data on 42 PBL sessions
Videotape of PBL Sessions		
6 PBL groups 6 groups × 4 sessions 24 PBL sessions	9 PBL groups 9 groups × 2 sessions 18 PBL sessions	Video data on 42 PBL sessions

* Seventeen students (7 Asian and 10 local) participated in two video-stimulated recall interviews. Seven students (local) participated in single video-stimulated recall interviews due to the decision that data saturation had been reached.

Constructivist grounded theory (Charmaz, 2003) was used to analyze the video-stimulated recall interviews for emergent themes. Interviews were transcribed before themes were coded and categorized. Constant comparisons within each student's interview transcripts and between students' interview transcripts were used to identify key themes.

In the process of data analysis, it became clear that the collaborative demands of PBL conflicted with Asian students' preferred ways of learning. Therefore, a literature search on collaboration in PBL was conducted with a view to using an existing framework to further describe Asian students' collaborative behaviors in PBL. When no existing framework was identified, it became essential to develop one to better understand collaborative behaviors in the PBL context. For this component of the study, video data from seven purposefully selected tutorial sessions were used to typify tutorial behaviors. Video-stimulated recall interviews were also used to gather information on the motivation for the observed behaviors.

Results

All 13 Asian students and 8 local students were identified as "silent participants" within the PBL context. The term silent participant was coined to describe group members who, while attending PBL sessions regularly, spoke minimally during the tutorials. Videotape data showed these students speaking infrequently during the PBL sessions, in many cases fewer than five times within the two-hour session. This contrasted with the 45 or more verbal inputs per session that characterized the typical student. These silent participants also spoke briefly, and rarely entered the discussion and debate that was part of the PBL process. They did, however, complete the required research on learning issues and shared it with the group when prompted by the tutor or other group members (Remedios, 2005).

Interview data highlighted Asian students' preference to listen and the complexity of their motivations to listen in the collaborative context (see Table 4). In addition, interview data from both local and Asian students and memos collected by the participant observer (first author) indicated that collaboration was viewed within the PBL context as essentially dialogic, with students viewing verbal contribution as privileged over active listening for learning in the classroom (Remedios, 2005).

Table 4

Illustrating complexity of issues related to collaborative listening.

Motivation for Listening	Illustrative Quotes from Asian Students' Interview Data
Understanding content material	Because I can't really remember some of the things, so by listening I thought I can try to understand it more (Linda, 2, 8, 26–27).
Learning PBL skills	I am really interested to work with different people. I want to know how the Aussie (Australian) students think and how they process information, and some of them do come up with very fantastic hypothesis. And one of my weak points is that I can't come up with them, so I like to listen to what they say (Lin, 2a, 4, 7–10).
Polite listening	Like whenever we sit down and listen to you it means that we are being polite. We want to hear what you want to say, but for Aussies, they are just say oh she is just sitting there getting information, and not contributing (Jody, 2a, 13–14, 11–2).
Difficulty understanding language and content of discussion	I am more focused on my explanation, on my opinion, rather than on other talkings, because it is very hard to understand many times, and also many times it's not relevant, I think verbal information is not relevant for me, is not help for me (Chul Soo, 2a, 10, 14–17).
Concurrent speaking	I think I had some trouble listening to some people sometimes, some of them just mumble away. And there are always this case when two people talk at the same time (Vivian, 2a, 8, 8–11). But they get side-tracked very easily. And it is like there are always two or three conversations going on at the same time (Lilin, 2a, 2, 5–6).
Judging coherence	Lin: Because like, that everyone is talking, and then I don't know who to listen to and, I don't know what they are talking about. Interviewer: So how do you decide who you should be listening to when everyone is talking at the same time? Lin: Um. I just listen to those who make sense (Lin, 2, 10, 32–36).
Listening as a skill	And it is like there are always two or three conversations going on at the same time. It is difficult to get them to listen to one person and to wait for the person to finish (Lilin, 2a, 2, 6–7).

Motivation for Listening	Illustrative Quotes from Asian Students' Interview Data
	... and often I think they forget to listen to other people, ... the person was presenting, there was like no one listen to her so in the end she is not being heard (Jody, 2a, 9, 21–23).
Prior learning/Cultural habit	For my culture, we maybe, we don't really have a lot of discussion ... normally we are having class, the teacher talks (Vivien, 1, 4, 20–22). I think it is a habit that I don't speak up. Cause in Singapore I usually just sit back and listen (Sue Mee, 1, 12, 7–10).
Tension between listening and speaking	Yeah, so it disturbs me to concentrate on discuss, because I try to speaking, rather than listening. I can't do both (Chul Soo, 2a, 12, 13).

Note: Interview excerpts are identified through interview number, page and line. For example, a quote taken from Linda's interview 2, page 8, lines 26 to 27 is presented as (Linda, 2, 8, 26–27).

The conclusion that verbal contributions were viewed as privileged over listening was based on several sources of data. It was common for Asian students to search the videotapes of their PBL sessions for instances when they spoke, suggesting a focus on their own speaking as central to their experience of PBL. Students also spontaneously and repeatedly raised the importance of verbal participation in their interviews, with fewer references made to listening. Further, the majority of Asian students expressed concerns that they were either the quietest or one of the quietest in their groups, and spoke extensively about the constraints to their speaking in the tutorials. For example, Sun Li, a student from Malaysia noted, "I seldom talk, I seldom contribute that much, that's because I don't know what I should say about ... so I [am] just sitting there and wondering" (Sun Li, 1, 8, 18–21)¹, and Lin, from Singapore stated, "I don't express my thoughts very well, I find it very difficult to put into words" (Lin, 1, 2, 15).

The apparent foregrounding of speaking over listening in students' experiences of PBL motivated the authors to suggest that collaboration be reconstructed as a balance between listening and speaking. This approach, then, provides a more coherent and articulate framework for examining collaborative practice in PBL settings.

Defining Collaboration

Based on the literature, two core characteristics were identified as central to collaboration in the PBL context: (1) all actions are, in theory, directed to the group's development of knowledge and occur within the public domain, and (2) all input should contribute to

¹Interview excerpts are identified through interview number, page and line number. For example, a quote taken from Sun Li's interview 1, page 8, lines 18 to 21 is presented as (Sun Li, 1, 8, 18–21).

the construction of a deeper and more complex pool of knowledge than previously held by the group. Combining these two concepts, collaboration is operationally defined as

Actions that support the public linking/construction of information to other group members' contributions for the purpose of achieving a shared goal and to develop a shared understanding of a more integrated and complex picture than previously available to the group. (Remedios, 2005)

Video data were analyzed with a focus on the actions of listening and speaking. Data on group interactions allowed for dichotomized categorization of speaking and listening behaviors that were consistent with the preceding definition of collaboration. Categories included foreground/background attention, on-task/off-task focus, public/private intentions, and consequently collaborative/noncollaborative actions (with terms to be defined in relevant sections). These categories were fitted into a framework developed specifically for examining the enactment of collaboration in PBL tutorials.

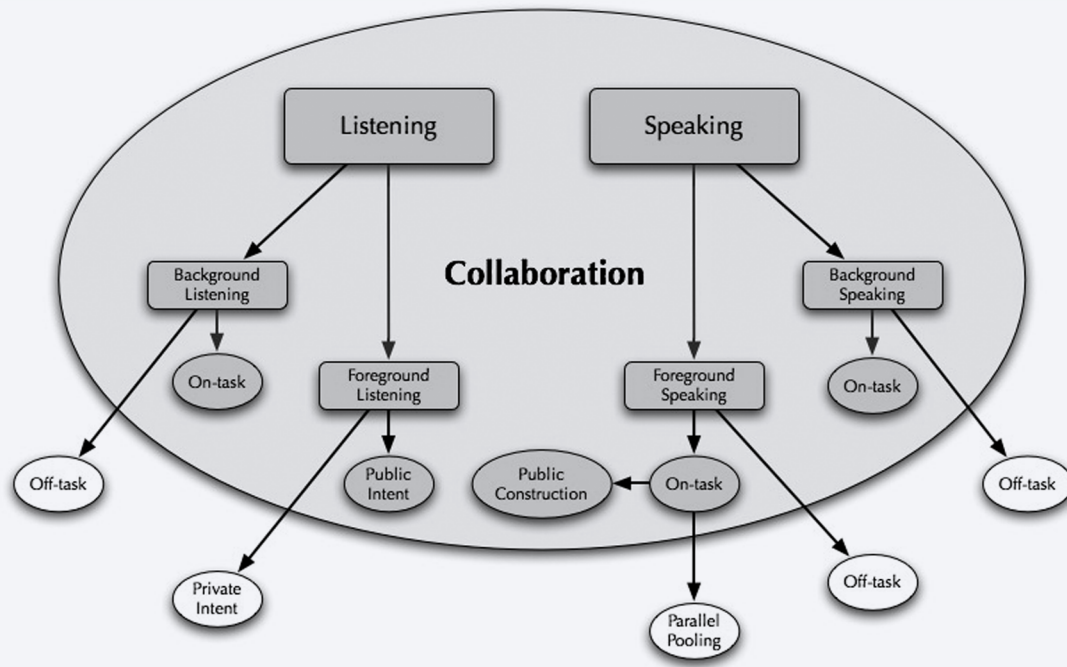
The Collaborative Listening/Speaking Framework

The framework that categorizes action in terms of its collaborative or noncollaborative participation is provided in Figure 1. Both listening and speaking are presented as being of equal importance in this construction of collaborative participation. Four modes of participation are highlighted.

1. *Foreground listening*, which is listening to the group member(s) who have the floor
2. *Background listening* to group member(s) who do not have the floor
3. *Foreground speaking* by group member(s) who have the floor
4. *Background speaking* by other group member(s) who do not have the floor

At the center of the framework and highlighted as collaborative (shaded area) are modes of collaborative participation we view as ideal. Although background listening and background speaking are commonly seen by tutors as a digression from, and a move to, a less collaborative mode of participating, we argue that they can be interpreted as having collaborative intent and can serve a collaborative function in supporting the group progress to a deeper understanding of the problem. Behaviors outside the boundaries of collaboration (non-shaded area) are modes of participation that we view as noncollaborative.

Figure 1. Collaborative listening/speaking framework.



Adapted from: Remedios, 2005, unpublished PhD thesis

Listening as a Collaborative Act

Asian students’ interviews indicated that both listening for learning and motivations related to listening were complex. Students described the importance of listening for their learning, the difficulty with listening effectively in the highly verbal PBL tutorial, and the tensions between listening and speaking. Table 4 provides selected examples of quotations from Asian students’ interviews to illustrate some of the complexity related to collaborative listening. These examples were selected to highlight both the value of listening for learning and listening as a learning skill that requires development.

Public building of complexity of group knowledge cannot occur without listening to understand so as to construct new knowledge on the group’s expanding knowledge base. As indicated by the two listening modes of collaboration, a group member who is listening can either be listening to the speaker(s) who has the floor, the foreground speaker, or to group member(s) in a background conversation, the background speaker(s). In our study, tutors sometimes viewed the latter as problematic, as these background conversations typically occurred concurrently with foreground speaking and so competed with the foreground speaker. Groups themselves set ground rules designed to discourage competing conversations such as “only one person should speak at a time.” Some of these concurrent conversations (background listening and speaking) could be viewed as not promoting group learning and therefore noncollaborative but other concurrent background conversations could serve a collaborative

function. Students were seen to be listening to brief background conversations that were on task and listening to explanations of Australian colloquial expressions, effectively learning without interrupting the group's progress. If this learning allows students to contribute to the group discussion at a later stage, these on-task listening acts have a collaborative function.

For students who are listening to the foreground speaker, foreground listening can also have a collaborative or noncollaborative intention. Although applauded as an act of active learning, listening for private learning cannot be read as a collaborative act, as it does not aim to assist the group. For example, listening only to pass examinations is not collaborative. If however, the listening is to understand in order to contribute to public knowledge, it can be viewed as collaborative. Further, a student can be listening to learn how to develop PBL skills as well as the sociocultural rules of how collaboration is done. Lin, a student from Singapore spoke about her interest in improving her ability to develop hypotheses: "I want to know how Aussies (Australians) think and how they process information, and some of them come up with very fantastic hypothesis, and one of my weak points is that I can't come up with them" (Lin, 2a, 4, 7-10). Desmond, also from Singapore, highlighted his interest in learning about the sociocultural rules: "It [PBL] helps you to understand, most sensitive in your communication skills. Push it up in the sense that you know when you are supposed to talk, when you are not supposed to talk, all the social cues" (Desmond, 2b, 14, 16-23). This knowledge can serve to improve the quality of subsequent input and so genuinely progress the group's learning in a future session. Because a student's intention when listening cannot be read from observation alone, the only cues available to the tutor to determine collaborative intention can be seen in subsequent verbal contributions or through post-lesson interviews.

Speaking as a Collaborative Act

The concepts of dialogue and collaboration are closely linked, but not synonymous. Collaboration is dependent on dialogue, and is unlikely without dialogue. Dialogue, however, can occur without collaboration. For example, students can present their ideas without working toward a common goal, provide highly distracting comments, or enter into conflicting and unproductive discussions. It is the intention to work toward the common goal(s) and to contribute to the group's learning agenda that is central to collaboration.

When choosing to speak, group members again have two possible modes of collaboration. They can present "on-task" information to the group at large, with the intention of sharing their knowledge and building public complexity, which is the most direct and easily observable choice to collaborate. Contributing information relevant to the group's agenda; expanding on another group member's input; and debating, questioning, and summarizing other group members' contributions are all viewed as effective

collaborative practice. Contributing to the group by explicitly linking information to the contributions of previous speakers is seen as collaborative (Hmelo-Silver, 2003), as is building on the depth, breath, and complexity of group knowledge.

One type of on-task contribution that can be viewed as contentious is the contribution of isolated information that is not linked to the group discussion. Knowledge can simply be added to the group's pool of knowledge, with no effort made to explicitly link it to previous ideas. This information may, or may not, be relevant to the point under discussion, and other group members are required to judge relevance to their personal understanding. We refer to this type of verbal contribution as parallel pooling.

Referring to the two core principles of collaboration, parallel pooling satisfies the first principle of putting private knowledge into the public domain, but does not satisfy the second, because it does not explicitly add to the development of more complex group knowledge. In parallel pooling, the group members may be consciously trying to contribute as effectively as they can and may judge themselves to be working collaboratively. In several examples, students introduced new concepts in the midst of incomplete discussions and, in some cases, even ignored questions raised by a group member, to talk about a completely new point. Such students fall short of contributing to a shared understanding and the construction of a more coherent and deeper group understanding. Although it can be argued that it is reasonable to judge students by their intention rather than the outcome of their input, if students are to learn the skill of collaboration, they need to learn how to link their input more explicitly to the group's conversation.

When speaking to the group, group members can again go off-task. They can present information that is intentionally distracting. One example, captured on videotape, showed the group discussing the role of muscle strength when climbing stairs, when a local student went off-task with, "I had a dream about sharks last night ..." and then went on to discuss her dream for several minutes. Later, another local student's comment, "I can run in my high heels now," when the group was discussing the importance of balance during walking was foreground input that was off-task.

In relation to background speaking, students could follow the apparently less collaborative option of speaking to individual(s) in a competing conversation. They may be speaking off-task, distracting other students and drawing attention away from the development of group knowledge, clearly a noncollaborative choice. However, if they are on-task, asking clarifying questions of another individual (so as not to distract the group with what they see as a minor question), or if they are explaining or clarifying material for another student, their behavior may be collaborative. Two observed examples of background on-task speaking were of Sue Mee (student from Singapore) asking for clarification of an Australian colloquial expression, and Leah (local student) asking for clarification on what was being discussed by the group. In these cases, students were avoiding slowing down the group to deal with something that could be covered more

quickly in an aside. The aim to develop personal understanding, so as to be an effective group member and to more effectively participate in the group discussion is collaborative in intent. These actions are consistent with the PBL agenda for sharing learning and therefore should be viewed as collaborative.

Problematizing Judging Collaboration

Although this framework was useful in judging the collaborative responses of students who verbally participated in the classroom, it was less useful if a student chose to be silent for most of the session. The expectation that a student must speak following a period of silence in order to be viewed as collaborating has its difficulties. Three examples, drawn from the video-stimulated recall interviews, illustrate the point that choosing not to speak following a period of listening can still be viewed as collaborative.

First, students may be following the discussion closely with the intention of filling in the gaps or contesting any inaccuracies, but find that they are in total agreement with the group or that the information has been presented previously. Adding further information is therefore unnecessary. For example, Adam, a student from Taiwan, noted that “normally I will let people talk about it, and I will think about other stuff that people probably won’t consider, or not even mention in their conversation” (Adam, 2a, 5, 26–28), and “I will let them say first, when everyone else becomes silent, then I say, start to add if there’s anything” (Adam, 3a, 9, 37–38). Vivien, from Singapore explained, “When I want to say something, someone has said it already” (Vivien, 2b, 7, 33).

Second, students may plan to add information, but may not find any space to add their input to the group conversation, because the impetus of the group’s discussion moves too rapidly, and the students make a decision not to interrupt the flow of the discussion. Grace, who had completed a previous degree in Canada, noted, “I want to say something but then people keep talking and then you can’t cut in. ... Finding a gap to jump in, it is very, very hard” (Grace, 2b, 2, 29–31). Sonia, a student from Hong Kong, explained, “Sometimes I want to know when to start, because they are still explaining something, and I don’t know where, when I can, distribute another answer” (Sonia, 2a, 5, 7–8). A concern with interrupting other speakers may also play a key role here. Jody, from Singapore, highlighted this aspect:

The reason why I don’t speak up is really that regularly in class is because I don’t know how to interrupt them. The way they interrupt, in Asian culture that would be considered rude. But for me when I hear them talking over each other, even if I have a point, I would not bring it up, because it would seem rude. I guess that is a problem and because we feel that if we are interrupting that we appear to be rude to people, the Aussies (Australians) see it as “oh, she is very quiet” and “she lacks much to say” (Jody, 2a, 13, 14–20).

A third reason for not speaking following a period of listening may be due to students' concerns that their own difficulties with expressing ideas will slow down the progress of the group. The choice to stay silent is motivated to some degree by not wanting to delay or disrupt the group's learning. Sonia, from Hong Kong, expressed a common concern over the risk, "I am afraid to slow down the pace" (Sonia, 2a, 6, 11), and later "just don't want to stop all the time, then, and concentrate on me" (Sonia, 2a, 7, 5).

Discussion

The literature draws attention to collaboration as requiring both the individual's contribution to the group learning as well as the individual's learning from the group (Chizhik, 1998; Kelson & Distlehorst, 2000). Group members need to operate in two modes to participate collaboratively; they need to contribute to the group and they need to hear and learn from the contribution of others. A major finding of this study was that both the Asian and the local Australian students perceived speaking as privileged over listening in how collaboration was done in the PBL classroom. Students and tutors appeared to focus on the skills of verbal contribution and viewed "speaking" as required to satisfy the PBL assessment criteria and the only way to receive a satisfactory grade in PBL. Further, PBL tutor training concentrated on encouraging students' verbal participation, and tutors were seen to scaffold quiet students' verbal contributions throughout the PBL tutorials. In contrast, listening was less explicitly valued as a collaborative skill, and students' listening skills were rarely scaffolded.

The literature is also largely silent on the issue of listening and its associated "silence" as a mode of valid participation in PBL. The risk is that verbal participation is read as an act of collaboration and silence as failure to collaborate. For example, Smith and colleagues (2005) stated, "Silent students are uninvolved students who are certainly not contributing to the learning of others and may not be contributing to their own learning" (p. 9). We would also argue that students who are speaking are not necessarily contributing to the learning of others or learning themselves. Conversely, those who are silent may be contributing, at least, to their own learning.

The idea that collaboration is enacted exclusively as verbal participation must be contested: Verbal participation is a key to collaboration, but verbal participation is not equivalent to collaboration. Furthermore, silence can be a strongly collaborative act. We argue that both speaking and listening are fundamental components of collaboration, despite the difficulty with judging silence (denoting listening) as collaborative. Silence can reflect both active listening as well as a passive stance of disengagement and loss of interest (Poland, 1998). Silence can be an act of support and one way of acknowledging group consensus. It can reflect a listening for gaps or conflicts in the group's discussion with a view to adding insights that will progress the group's understanding. It can also

be a polite act of respect and a culturally appropriate behavior for some groups of students. The decision to be silent, therefore, does not necessarily represent a noncollaborative stance and should not be read as such. The risk in interpreting all cases of silence as listening is acknowledged. However, unless one has evidence to the contrary, one cannot judge an individual's silence as noncollaborative.

Another issue that may be contentious is the viewing of competing conversations or background conversations as potentially collaborative. Treating any conversation that is not public or part of a whole group conversation as noncollaborative may silence students who are learning without slowing down the group's progress. We are not suggesting that background conversations be encouraged as a substitute to foreground discussion. Rather, we argue that tolerance to competing conversations and consequently, of background speaking and listening, must be guided by the requirement that such conversations relate to the matter under discussion by the whole group. This requirement should be discussed and negotiated explicitly with the PBL group members.

Students must understand how to behave and to select appropriate behavioral responses to meet the obligations of classroom practice. This information is culturally embedded in any learning context (Martin & Cambell, 1999). Students new to PBL are required to grapple with multiple cognitive, affective, and social obligations. Further, previous learning preferences may make PBL requirements more difficult for some students. Substantial evidence indicates that the active preference for students from some cultural groupings is to listen and to learn silently in the PBL classroom (Dixon et al., 1997; Khoo, 2003). Although these students' listening skills should be acknowledged, it is essential that they are not constrained to silence and that tutors scaffold students' skills in elaborating knowledge and in publicly linking ideas to group conversation.

Tutors must also be cautious in judging silence as noncollaborative or of speaking as demonstrating the skills of collaboration. Further, they should take steps to promote the use of listening as a collaborative skill that needs development. Strategies such as promoting summaries of group discussions, the explicit linking of ideas to previous speakers' contributions, and giving feedback on group members' listening skills would effectively shift the focus toward a more balanced valuing of speaking and listening in PBL. Theoretically, in a group of 10 students, each student would spend nine-tenths of the session actively listening and one-tenth of the time verbally contributing to the group's knowledge. This focus counters the belief that he or she who speaks most, participates best, and discourages students from competing to speak rather than collaborating for learning.

Conclusion

On the basis of a two-year ethnographic study we argue that verbal contribution itself is not adequate evidence of collaboration. Noncollaborative acts are defined as those that do not publicly progress the group's learning through the PBL process or which are intended for private/personal goals alone. Listening or speaking that has the intention to contribute to group learning should be viewed as collaborative. Even though verbal contributions are the principle visible evidence of collaboration, it is an inadequate indicator of collaboration. The CLS framework is helpful in attempting to track each individual group member's collaborative behavior, it must be recognized that only part of the picture can be captured from observation.

The CLS framework advocates a more inclusive view of what constitutes collaborative activity and should assist PBL tutors to scaffold students' development of collaborative skills. The tutor has a role in focusing students' attention on and increasing their ability to "read" and enact the important behaviors of collaborative practice. In facilitating novice students' engagement with collaborative practice, the tutor will be more effectively facilitating the group's progression to a deeper and more complex shared understanding of content knowledge, while developing the collaborative skills that are part of the PBL agenda for learning.

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