2016

Interactional research in PBL: Another piece of the 'silence in PBL' puzzle: Students' explanations of dominance and quietness as complementary group roles

Vicki Skinner
University of Adelaide

Annette J. Braunack-Mayer
University of Wollongong, abmayer@uow.edu.au

Tracey J. Winning
University of Adelaide

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Vicki J. Skinner
The University of Adelaide, vicki.skinner@adelaide.edu.au

Annette Braunack-Mayer
The University of Adelaide, annette.braunackmayer@adelaide.edu.au

Tracey A. Winning
The University of Adelaide, tracey.winning@adelaide.edu.au

Recommended Citation

Skinner, V. J. , Braunack-Mayer, A. , & Winning, T. A. (2016). Another Piece of the "Silence in PBL" Puzzle: Students' Explanations of Dominance and Quietness as Complementary Group Roles. *Interdisciplinary Journal of Problem-Based Learning, 10*(2).
Available at: https://doi.org/10.7771/1541-5015.1607

ARTICLE

Another Piece of the "Silence in PBL" Puzzle: Students' Explanations of Dominance and Quietness as Complementary Group Roles

Vicki J. Skinner, Annette Braunack-Mayer, and Tracey A. Winning (The University of Adelaide)

Abstract

A problem-based learning (PBL) assumption is that silence is incompatible with collaborative learning. Although sociocultural studies have reinterpreted silence as collaborative, we must understand how silence occurs in PBL groups. This essay presents students' explanations of dominance, leadership, and silence as PBL group roles. An ethnographic investigation of PBL groups, informed by social constructionism, was conducted at two dental schools (in Australia and Ireland). The methods used were observation, interviews, and focus groups. The participants were volunteer first-year undergraduates. Students attributed dominance, silence, and members' group roles to personal attributes. Consequently, they assumed that groups divided naturally into dominant leaders and silent followers. Sometimes silence had a collaborative learning function, but it was also due to social exclusion. This assumption enabled social practices that privileged some group members and marginalized others. Power and participation in decision making in PBL groups was restricted to dominant group members.

Keywords: silence in PBL, collaborative learning, students' perceptions, group roles, noninclusive practices

Introduction

Collaborative learning, which is a central element of problem-based learning (PBL), places demands onto students such as being expected to contribute to group discussions. These expectations arise from various conceptual frameworks, which specify that collaborative learning requires a number of ideal group practices and dynamics. Group practices that are ideal for collaborative learning include discussing and negotiating, while ideal group dynamics include cooperation and mutual engagement (Bruffee, 1999; Johnson & Johnson, 2009; Slavin, 1996). Therefore, an accepted PBL principle is that to promote collaborative learning, all group members should actively and equally participate in group discussions (Dolmans, de Grave, Wolfhagen, & van der Vleuten, 2005; Hmelo-Silver,

2004; Savery & Duffy, 1995). The implication of this principle is that uneven participation and silence from some students is incompatible with the goals and processes of PBL.

This principle has been investigated by research into student and tutor views. Numerous studies of PBL group function and dynamics have reported that students believe that all group members are obliged to contribute to group discussions (Dolmans et al., 1998; Nieminen, Sauri, & Lonka, 2006; Virtanen, Kosunen, Holmberg-Marttila, & Virjo, 1999; Willis, Jones, Bundy, Burdett, Whitehouse, & O'Neill, 2002). Similarly, investigations of tutors' and students' views of issues in PBL group dynamics have identified quiet or dominating students as both problematic *and* frequent in PBL (Hendry, Ryan, & Harris, 2003; Houlden, Collier, Frid, John, & Pross, 2001). Further, both tutors and students have considered that dominating students impede learning, and while neither tutors

nor students considered that silent students are detrimental to learning, both groups reported that silent students are a burden on the PBL group (Hendry et al., 2003). In one study, quietness or dominance were framed as "individual dysfunctional behaviour" (Hendry et al., 2003, pp. 614–615). The authors suggested a range of possible causes, such as personality, confidence, and cultural or personal learning preferences (Hendry et al., 2003, pp. 614–615). The notable point about this strand of research is that PBL group members' dominance and silence were regarded as being due to individual factors, that is, factors that students had brought *into* the PBL group.

However, the specific issue of silence and dominance in PBL has been reinterpreted as a result of naturalistic studies into the workings of PBL. Investigators using sociocultural and discourse-based approaches have explained how silence in PBL can be an active rather than passive aspect of collaboration and learning (Imafuku, 2012; Jin, 2012; Remedios, Clarke, & Hawthorne, 2008a, 2008b). It has been suggested that students opt for silent behavior due to complex interacting personal and social factors (Imafuku, 2012; Remedios et al., 2008b). Further, dominant students themselves have explained their own behavior in social and constructive, positive terms, such as contributing to the group by providing guidance or leadership (Duek, 2000; Faidley, Evensen, Salisbury-Glennon, Glenn, & Hmelo, 2000; Imafuku, 2012). It has been suggested that dominance in PBL may also occur when students, who may be more familiar with valuing speaking as ideal classroom behavior, have not yet become socialized to the value of listening in PBL discussions (Imafuku, 2012; Remedios et al., 2008a).

These sociocultural studies have illustrated the complexity and the purposes of dominance and silence during collaborative learning in PBL for dominant and silent students. However, we don't fully understand the social practices that can produce silence and dominance in PBL groups. This essay arises from a study that aimed to explain the social construction of PBL groups, including the role composition of the group and its impact on group function. The research questions for the study were *How did students describe and explain the development of their PBL groups?* and *What was the implication of this for group function?* The data reported here focus on students' explanations of the occurrence and impact of dominance, leadership, and silence as PBL group roles and their impact on group function.

Methodology

Throughout the design and implementation process for this study, we used accepted qualitative methodology regarding rigor and reflexivity. While rigor is variously defined in the literature, a commonsense interpretation is one of "trustworthiness" of the research (Liamputtong, 2013). As such, rigor ought to be embedded within research design and implementation by, for example, ensuring a coherent fit between epistemology, theoretical stance and methodology, and the selection of data gathering methods (Carter & Little, 2007; Liamputtong, 2013). Rigor is also supported through specific strategies (Carter & Little, 2007; Liamputtong, 2013), which we adopted: namely, reflexivity (i.e., researcher's examination of own role and relationships in the study), triangulation to enrich data and allow for contrasting views (i.e., observation, interview, focus group), and member checking (i.e., participants enriching and clarifying findings via transcript review and focus group participation).

Therefore, we designed a naturalistic study from a social constructionist theoretical perspective (Crotty, 1998). Using this perspective, we proposed that PBL groups and their meanings for students were constructed through students' beliefs and everyday practices and activities during PBL. Similarly, we understood that research is also a process of co-construction of meanings between the researcher and the participants. Given our theoretical perspective and our research aim—to understand the meaning of PBL groups for the students involved via their everyday practice—we chose ethnography as the most appropriate methodology (Carter & Little, 2007; Crotty, 1998). The research methods included participant observation and unstructured interviews, followed by focus groups (FGs) with the interviewees to further enrich the data and to check and clarify our observation and interview findings and conclusions. After obtaining ethics approval from the relevant committees of each institution, we conducted a cross-site investigation at two dental schools, one in Australia and one in Ireland. Our reasons for designing a cross-site study were twofold: to enhance researcher reflexivity via the experience of an unfamiliar PBL context and to enrich the data and strengthen our conclusions by comparing and contrasting the cross-site findings (Denzin & Lincoln, 2005; Liamputtong, 2013).

The primary author (VS) was responsible for all data collection and preliminary data analysis such as coding, and all other authors were involved in data analysis discussions. The primary author/on-site researcher had experience in facilitating PBL and a professional interest as an educator in understanding PBL but was not involved in teaching or assessing students at either school during the study. The study arose out of the primary and third authors' informal observation of student PBL groups and a desire to understand them better in order to improve our group learning environment. During the study, VS kept a reflective journal in which she recorded her thoughts and feelings about her involvement with the participants and the development of the research. This was done to enable critical examination of the researcher's role in constructing the findings.

Participants were first-year students at the commencement of their program and their engagement with PBL in a dental curriculum. Most participants had entered dental school directly after completing their secondary schooling ("school leavers," Table 1); the non–school leavers had either transferred from another tertiary program or were classed as mature-aged entrants (see Table 1). Students were classified as domestic (i.e., Australian or Republic of Ireland/UK residents) or international (i.e., temporary residents from overseas). Most participants had no previous PBL experience. Novice PBL students were of interest because of the prior informal observation in our school that group practices established in early years tended to be maintained in subsequent years. We used maximum variation purposive sampling (Coyne, 1997; Liamputtong, 2013) and so invited the entire Year 1 cohort at each school to participate in the observation phase of the study. As researcher, VS was solely responsible for running the information and recruiting session at each site, in which project documents were provided to all students in the cohort, and for all of the group allocation processes. Consenting and nonconsenting students in the cohort were identified, and a stratified list of consenting students was created: female domestic, male domestic, female international, and male international students. This stratified list of consenting students was used to randomly assign students to PBL groups with equal distributions of male/female and domestic/international students. These groups, composed only of consenting students, participated in the observation phase of the study (see Table 1, rows 1–2 and 4–5). Nonconsenting students were assigned to nonobserved PBL groups. In Australia 4 groups of the total 10 were observed, and in Ireland 2 of the total 4 were observed. For the interview phase of the study, we invited all members of 3 of the 4 observed Australian groups and both of the observed Irish groups (see Table 1). Consistent with our ethical approval to protect participant anonymity, we have not reported the exact composition of the PBL groups with regard to their domestic/international or school leaver status, because this could potentially identify the groups and hence the individual participants.

Both Schools had hybrid five-year undergraduate/PBL curricula based on the Maastricht seven-jump approach to PBL. The curriculum context and the Maastricht implementation of PBL at each school have been described in detail elsewhere (Skinner, Braunack-Mayer, & Winning, 2015). In Australia, each PBL group was composed of seven students, and it was expected that each week one student would be the scribe for the session and record key information on the whiteboard, with everyone taking turns at this role. There were no other directions concerning group roles. Irish groups each had 10 students and were required to have a chair and a secretary for each session. The chair role was to monitor the PBL steps and member participation during the group discussion (there was no equivalent to the chair role in Australia). The Irish secretary role was equivalent to the Australian scribe role. Each student was expected to take a turn at chairing and being secretary, and each group had its own approach to achieving this. One group's tutor prepared a roster of volunteer pairs several weeks in advance, while the other group's tutor asked for two volunteers prior to each upcoming problem.

The investigation took place over two full academic semesters (Australia) or one full academic term (Ireland). Phase one was observation with the participant PBL groups over multiple PBL cases/problems early in Semester 1 (Australia) or the Michaelmas (i.e., first) term (Ireland). Semester 1 in Australia took place over 12 weeks from March to June; Michaelmas term in Ireland was 10 weeks between October and December. Phase one was designed so that observations of each group were spread over multiple cases both early and late in the observation period; this meant that the whole 12 weeks of Semester 1 in Australia and weeks 1–9 of the Michaelmas term in Ireland were included to allow VS to observe any change over time. Participant observation meant that VS attended both the analysis and reporting-back phases of several problems with each group; in Australia VS also attended group meetings convened by students to discuss their between-class research. Phase two consisted of individual interviews with students from observed groups early in Semester 2 (July/August, Australia) or later in the Michaelmas term (November, Ireland). Each interview in Australia lasted approximately one hour, and in Ireland each interview lasted approximately 45 minutes. The interviews with Australian students were relatively unstructured to be as broad as possible (in the context of the whole study) and contained just three topic areas/questions:

1. Would you describe your PBL group?
2. What were the good things about being and working in a group?
3. What were the not so good things about being and working in a group?

Since the Irish study was a smaller, triangulating investigation, the interviews were semistructured, with slightly more focussed questions, which in relation to PBL and group work included these questions:

1. How would you describe the way your group works?
2. What makes a good/bad brainstorming/reporting session?
3. How do you decide when you're happy with what you've done for a PBL problem?
4. What are the good things about PBL so far?
5. What about not so good things?

Data for analysis included VS's observation field notes and professionally typed interview transcripts. The field notes included descriptive accounts of group activities and individual member behaviors and dialogue as well as VS's reflective notes about her involvement and preliminary analytical ideas. Initial analysis proceeded as interviews were conducted at each site. making interviewing and analysis an iterative process (Carter & Little, 2007; Liamputtong, 2013). Interviewees each reviewed and, if desired, amended their own transcript before analysis. For analysis and results reporting, VS assigned each interviewee a pseudonym. The analytical approach drew on grounded theory by commencing with codes "grounded" in the data and used a thematic approach by seeking patterns among the codes to construct analytical themes (Charmaz, 2000; Liamputtong, 2013). For example, many students spoke of people as "active" or "passive" and as "leaders" or "followers," so these words became initial codes that were then grouped into themes, such as "types of people in the group." Then the analytical themes were arranged into a set of broader interpretive themes, representing the researcher's story of the students' actions and stories, such as "group and people skills development" and related subthemes such as "appreciating individual differences." After this stage of data analysis at each site, the interviewees were invited to comment and elaborate on the interpretive themes (i.e., member checking). All interviewees were e-mailed a list of the key interpretive themes from the data analysis for that site and a dot point summary description or elaboration of

Table 1. Australian and Irish participants.
Note. "Domestic" for Australia means permanent resident, and "domestic" for Ireland means Republic of Ireland or UK permanent resident. "IS" means international student, an overseas temporary student resident.
[a] Four PBL groups were observed, and three groups were selected for interview recruiting and data reporting
[b] All names are pseudonyms.
[c] School leaver on entry to dental school; others are mature-age entry or have transferred from another tertiary programme.

		Female Domestic	Male Domestic	Female IS	Male IS	All Students
Australia	Year 1 cohort (all invited)	Total = 27	Total =17	Total = 16	Total = 8	Total = 68
Australia	Four PBL groups observed[a]	11	9	5	3	28
Australia	Interviewees,[b] Five from each of the three observed groups	7 Amy[c] Angela Cathy[c] Diane[c] Julie[c] Paula Rosanne[c]	4 Bruce[c] Morgan Peter[c] Sam[c]	3 Alice[c] Carol[c] Ruth[c]	1 Martin[c]	15
Ireland	Year 1 cohort (all invited)	Total = 20	Total = 10	Total = 6	Total = 4	Total = 40
Ireland	Two PBL Groups Observed	12	6	2	0	20
Ireland	Interviewees,[b] Five from each observed group	5 Aileen[c] Brigid[c] Deidre[c] Kerry[c] Maeve[c]	4 Brendan[c] Kevin[c] Hugh Liam	1 Fiona	0	10

each theme. Australian interviewees participated in FGs to discuss the interpretive themes. The FGs were divided into separate sessions, with domestic and international students to enable the international students to have a voice. Irish interviewees responded individually to an e-mailed summary of interpretive themes. Themes were refined following this student consultation. A core goal of our analysis was to address the internal, or emic, meaning of groups from the students' perspective and the researchers' etic or explanatory perspective (Patton, 2002). Therefore, the results present roles that had meaning for students, as observed by and explained to VS during data collection and the meaning of dominance and silence in the PBL group. The subsequent discussion presents our explanation of dominance and silence in PBL groups.

Results

In response to the opening interview question—"How would you describe your group?"—students at both sites described their colleagues and how they comprised the group in terms of their usual or typical behavior and related roles. The following account presents evidence of this as quotes from excerpts from the primary researcher's field notes during the observation phase of the project and student interviews/FGs from phase 2. Students are identified as Australian or Irish with a superscript "A" or "I" after their pseudonym. The Australian groups are named Blue, Red, and Yellow, and the Irish groups are Green and Purple. The account is written in the first person as an account of the primary researcher's engagement with the participants.

Group Development

Through engaging in PBL, groups in Australia and Ireland spontaneously developed a tacit structure in the early weeks of the semester/term. Students spoke of this as a "natural" process of each person finding a role that suited him or her within the group:

> Sam[A]: We didn't set specific roles to people. We didn't really talk about anything with each other. It just happened, whoever ended up . . . people have it in them to do this and we found that out eventually.

Students described and explained group structure and function in terms of the types of people in the group. Each group developed its own member profile, which in turn shaped how the group functioned. When students described their groups, they either provided generic profiles of groups or listed group members by name, relating their function to their personality:

> Julie[A]: Going back to the high school thing, you know what everybody is like, so you don't really get the whole group effect, it's more of a friend thing you know, working with friends, but here it was more of the—you know how you read about the group and you have the dominant person, the introverted person and the shy person and you know and you've got the mediator. I could actually really see all of those people in the group, so that was interesting for me, the whole analysing thing [laughs].

> Deidre[I] [in Week 4]: I tend to notice that everyone has their own wee roles now. We've got Briony, and she's the one that makes sure everything's done, she's really thorough and will go through things again to make sure we understand, and she's kind of like the Mum, and then Hugh, he's like the Dad, he's a bit older and wiser and he kind of takes control. And then we've got Brendan, fountain of knowledge, knows everything. And then we've got Kevin, and he knows how to keep things going and make sure you're going the right way. Maeve doesn't say much but she would know a lot. And . . . then there's Pat, he has a lot of irrelevant things to say, he'll have a whole page off Google, and he'll decide to read it out. Ahhmm, there's kind of quieter girls, Gayle, Catriona, they don't say as much. I think they're just not usually that inclined to talk that much.

And so within a few weeks each group took shape and developed a group role profile and an usual way of functioning during group discussions. Although this was a tacit process, the similarities between different members' accounts of their own group were striking: people generally agreed on who did what and why in their group:

> Amy[A]: There tends to be not someone who says "*You have to do this and you have to do this*" but the way it pans out is that I end up writing on the board and Peter and Cathy tend to give most of the feedback to the cues that we're doing.

> Brendan[I]: The chairperson starts off, I would probably, anything the chairperson's missed I give direction to and there is probably three members who, any facts and definitions they go on about and then there is probably three people who are normally silent and on the odd occasion they say something and then there is two more people who back up any other people who give information.

Importantly, for most groups this structure and resultant pattern of function remained mostly stable over the semester/term.

Dominance and Leadership

A consistent feature of students' accounts of their groups at both schools was their classifying group members dichotomously on the basis of how vocal or quiet they were in the group, and this was often seen as a personality feature, such as being dominant or passive, and was also accepted as an inevitable or natural feature of groups:

Peter[A]: I think everyone knew who was louder and who was more passive. Obviously some people are quieter and some people are louder, so that's normal.

Maeve[I]: I like our group because it's a mixture. . . . [T] here are some people, I think, not dominating but more outgoing than others, but you're going to get that in every group.

The group leaders in Australia were the dominant members, while the other members became followers. The leaders directed and organized the group, which included deciding the direction of the PBL problem analysis, selecting the PBL learning goals, and deciding on group processes. In two of the Australian groups, Blue and Red, the leaders were clearly identified to me by students, both in interviews and during my observation. These leaders self-identified and were named by other group members as leaders. For example, in Blue group, Paula and Angela were the discussion leaders:

Paula[A]: We had a few dominant people, a few not so dominant people and then we had the people who just did whatever, just followed. Discussions were more dominated by say, Angela or I . . . we directed most of the discussion.

Angela[A]: There were two of us who would talk a lot more, share their own experiences a lot more and guide the discussions a lot.

Martin[A]: [Angela] was someone who became a leader.

Researcher: What did she do that made her a leader?

Martin[A]: She talked about this and this and suggested this and this and we tend to follow her and discuss basically what Angela said.

Alice[A]: Paula is the one to say "*We should divide the topic into this*" and why we should do this topic.

In Blue and Red groups there was some tension due to a contest for leadership. Julie and Morgan both explained that they tried to lead the group to improve its performance and

productivity; they said that their leadership duties included directing discussion, making decisions, and organizing group activities. However, Julie said that she and Morgan were in "head to head" conflict over the leadership role, and other interviewees from Red group verified this:

Diane[A]: There were a couple of people who were quite dominating and you know, you can't have two of these people in the same group and expect everything to go smoothly. . . . If they have a *conflict*, then there's trouble because they're both dominating.

All interviewees from Yellow described the group as having no distinct leader and being democratic and free of conflict. However, from the first day of observing the group I recorded in my field notes that the group of seven students appeared to be divided into two subgroups and that participation across the two was uneven. Four domestic students, who all spoke English as a first language and came from the same city, had befriended each other at the start of the semester, and the remaining group members included two international students and one domestic Australian student from interstate. This pattern continued through the semester.

Field notes—Week 1 Observation Session 1—Yellow: It appeared that Peter, Sylvia, Amy and Claudia all knew each other, so they ended up chatting. . . . During the whole session no one spoke to Carol, Bruce or Neil, they were excluded from the others' conversation.

I interviewed three of the four members of a Yellow subgroup, and none identified a specific leader who directed the group or dominated conversation. For example:

Cathy[A]: It wasn't one of those groups where people had to stamp their authority. It wasn't one of those groups where you have the really, really loud person who would need to be in charge or anything like that. Everybody was just happy to let everybody's personality be exactly that. There was no need to adjust yourself or make yourself a little bit quieter because people were happy just to let the group flow.

Only Carol, an international student in the three-member subgroup, commented differently on the group:

Carol[A]: These people were more the organisers of the group and they put in more ideas.

Leadership and personality were associated. The Australian students explained why certain people and not others were leaders by referring to their attributes as individuals. Students appeared to believe that people with particular personalities and abilities were most suited to leading groups,

taking charge, making decisions, and delegating, even though this could lead to conflict:

Alice[A]**:** They're two kinds [of people], active and passive, so the passive one will do, wouldn't mind doing the work and the active one will be the one that allocates the work.

Roseanne[A]**:** Julie was an organiser, Morgan was an organiser. . . . You could see it, their personality shone through.

The majority of the self-identified leaders also attributed their own leadership to personality. Paula, in the Blue group, told me that she and Angela were "both fairly opinionated people," and Angela explained that she herself was "pretty arrogant" and that she thought Paula was "one of the more aggressive people" in the group. Similarly, in the Red group, Julie felt equipped to be leader on the basis of her personality:

Julie[A]**:** In high school people always associated me with being a leader, you know those little quiz thingo's that they give, you know, "what kind of person are you?" I always get the one that says "you are a natural born leader." I like to take control, in school I was always the one who organised the group.

Morgan was an exception to this pattern of leader attribution; he spoke of the leader role as a skill-based job, which any team member could learn to undertake. Morgan said that as leader "you just tend to be another team member who has this responsibility." However, the other members of the Red group took a different, negative view of Morgan's leadership because they found it overbearing. Consistent with their general understanding of why people adopted roles, they interpreted his leadership style in terms of personal characteristics that influenced behavior. They described him as "dominating," "really pushy," and a "bit of a dictator."

In Ireland, students expressed ideas similar to those of Australian students about leaders and leadership. However, in Ireland, leadership was more complex because there was the official role of chair, with certain designated leadership duties, and there were also dominant students, who took on other leadership duties of their own accord. The following account illustrates students' understanding of how two PBL groups operated at the school in Ireland.

The Irish chair's designated responsibilities included managing group and PBL processes. Managing group process involved monitoring members' participation and enabling all members to have equal input. Managing PBL process meant ensuring that the group addressed each of the seven PBL steps in order without skipping any steps. The chair and the secretary were not supposed to partake in the content of the PBL discussion; they were to stand aside in order to fulfill their designated roles. The chair's designated duties to manage group and PBL processes were acknowledged and valued by students:

Kevin[I]**:** The chairperson really needs to control it and when people start rambling on, tell them to just relax and let other people talk.

Aileen[I]**:** The role of the chairperson, you need it to keep some sort of structure in it and make sure you get everything going in the time.

However, the Irish students constructed a further element of the chair role: they expected the chair to be a leader and direct group discussions (like Australian students' expectations of their leader). Students expected the chair to keep the discussion on the right track. Directing the conversation involved asking the right questions to adequately cover the topic, which placed a demand on the chair to know the topic in order to control discussion:

Brigid[I]**:** [The chair] should provide information where necessary and involve everyone but mainly direct the conversation.

Hugh[I]**:** The chairperson should take control of the group and not let irrelevance creep in.

Although students had definite ideas about the responsibilities of the chair role, the chair did not necessarily control and steer the group. Group control was related to the presence of "dominant" people:

Maeve[I]**:** The chairperson might as well not be present, because no matter who the chairperson is, it's the same three, four people dominating.

I observed that in each group particular students regularly monopolized the conversation and influenced the direction of the discussion. The Green group had a set pattern of talkers and nontalkers. My field notes record that the same students constantly clamored for airspace and talked over or interrupted each other, and the same students were regularly not part of the discussion. The dynamic in the Purple group was less boisterous but had a similar pattern; the same students dominated each session, and the same students were regularly quiet. Students from both groups commented on this phenomenon. Green group students acknowledged that the vocal students directed discussions and that it wasn't always a good thing:

Kerry[I]: It hinders the progress of the group because an awful lot of the time we spend all of us trying to say our bit, but no-one listening to each other.

Purple group interviewees also noted that the vocal or dominant students led the group, although no one described it as domination in an oppressive sense. This may be due to the general feelings of goodwill among group members (Skinner, Braunack-Mayer, & Winning, 2012). Kevin explained that "There's a couple of people who take it by the reins." Maeve used the word "dominate" but qualified her usage as not being negative:

Maeve[I]: Three to four just dominate the group and what they say goes. . . . [N]*o way* that they are bullying or anything like that.

Consequently, in spite of students' additional expectations of the chair's role, the chair did not necessarily lead the discussion; the dominant students always seized control, which frustrated other students. As a result, not all chairs were considered equally effective. A good chair required the right personality and ability to manage people plus appropriate content knowledge to direct the discussion:

Kerry[I]: When we have a strong chairperson everyone—everything goes according to plan but otherwise I think our group can go a bit pear-shaped.

Deidre[I]: You have to kind of be able to [slight pause] not be harsh to people but kind of cut them off, almost. And things like that; make sure you are always sticking to the problem, the discussion hasn't gone too far away and kind of make sure your problem statements are all covered, so your learning goals can then be established.

The Irish students attributed the effectiveness of the chair and the PBL session to the personal qualities and abilities of the student in the role. Brendan believed that how well the group worked "depends on how good the [chair] person is as a leader." Leadership skills and authority were associated with being a good chair and were assumed to come naturally with age:

Fiona[I]: [A good chair is] someone who knows which questions to ask, which can include everyone in the discussion and someone who is assertive. You need maturity to be a good chair.

Aileen[I]: I think some people have more authority than other people and people listen to them and follow their instructions, whereas they maybe ignore other people more.

Likewise, poor chairing was also due to personal attributes. Hugh's explanation for sessions being less successful was due to the chair "not being able to speak out and not trying to take control of the issues at hand." Liam's understanding of how he thought he was supposed to chair was contrary to how he saw himself as a person:

Liam[I]: I'm not an aggressive person. I don't want to shout down people and say will you shut up please; it's not what I want to do.

The Quiet People

In both Australia and Ireland, students clearly identified group members at the other end of the vocal continuum to the dominant people, referred to as the "quiet people." When describing their group, students referred to quiet people either as a subgroup of members or by name. This group consisted of both local and international students, and some students identified themselves as quiet during group discussions:

Roseanne[A]: Thomas wouldn't talk that much; that's his nature overall. Julie talked a lot. Morgan talked a lot. Freddie was just moderate; if he wasn't quiet, he wasn't too talkative. Diane and Ruth: Ruth was quieter than Diane but, you know, everyone talks, but Ruth was quieter. Diane was probably between Freddie and Thomas. So, yeah, you had the variations.

Using the same approach to understanding leadership as a personal trait, many students attributed quietness to qualities that members had brought into the group, such as shyness, lack of confidence, or a preference for quietness. Therefore, being able to speak up in group discussions was considered to be largely the result of individual characteristics and choices:

Bruce[A]: The ones who stayed quiet, I don't think they felt they were forced to stay quiet, it was just their personality. . . . [S]ome people are just naturally quiet, so they don't say anything.

Aileen[I]: Some people, a lot of people, do have a problem like speaking in public or whatever, so it's difficult for a lot of people. I don't really mind it. I did debating and it's good for me; I love a bit of discussion.

Brendan[I]: There would be some members who are not confident in expressing their views . . . and then there's me [said with a "smile" in the voice] who says everything.

Since quietness was regarded as natural, the quiet people were not criticized for their quietness if they were seen to be doing work. Other students often characterized such members as "quiet but valuable" participants in the group's undertakings:

Angela[A]: The reserved people usually wouldn't say anything. They could probably go a whole PBL without saying anything, but that doesn't mean, who am I to say, they're not focused or working hard.

Roseanne[A]: The people who talked less, when they did talk, they put in really valuable things because they're waiting for other people to say it, but they didn't, so they just say it and it was worth it.

Kevin[I]: Obviously some people are more vocal, some people are less vocal, but, um in terms of learning, you know that the less vocal people even if they don't speak they still have all the work done; you know they've done it, it's just they don't necessarily speak.

However, students in the quiet role gave a range of explanations for their quietness. In addition to being shy or naturally quiet, both local and international students gave alternative reasons for their quietness. A domestic Australian student, Bruce, who described himself as "quieter, not the quietest," explained that he remained quiet by choice, and he didn't feel as though it was a role put upon him by others:

Bruce[A]: It was easier to be quiet because other people think the same thing and will say it.

Other domestic Australian students were dissatisfied with their quiet position because they felt that it had been imposed or chosen unwillingly. For example, in the Red group, students I interviewed expressed dissatisfaction with being quiet. Diane, whom I observed to be an outgoing, talkative local student in interview and social settings, told me that choosing to be quiet in the group was her response to having her input "shunned" by Morgan in his leadership role. Roseanne had similar feelings:

Diane[A]: If you're constantly voicing an opinion and, you know, it's not being accepted then, you know, you're going to think "oh well what's the point?" "What's the point," you know, "I'm probably wrong." so I just kept quiet about it.

Roseanne[A]: When we did contribute, it didn't feel as if we were contributing anything that was relevant and useful.

These accounts are similar to events recorded in my field notes. For example:

Field notes: Week 1, Red group: The facilitator asks if someone can draw the lower jaw and teeth on the whiteboard. Roseanne volunteers and makes an attempt on the board but Morgan says that it isn't good. He comes to the board and draws his version. He then does a 'chalk and talk' lecture to the rest of the group about the drawing.

Similarly in Ireland, dissatisfied local Irish students who felt that their quietness was due to group factors explained how the dominant students made it difficult, if not impossible, for others to contribute due to the speed and loudness of their interactions. Students expressed frustration about this:

Maeve[I]: I talked to one girl outside the group and she is really nice and she is really chatty but when she is in the group she doesn't speak, and I am kind of the same, with me I hardly ever talk in my group because there are some people who have the same information as me, they just get in before me and I find it's a race for airspace.

Liam[I]: Three or four people are continuously dictating and never shutting up and everything is on their wavelength and it's their confusions, their points, their notes, their questions, it's their everything that the PBL session revolves around.

The International students in Australia whom I interviewed, and with whom I ran a separate FG, attributed their quietness to having an Asian cultural background (ranging from India to Southeast Asia) and traditional schooling. They told me that they had not learned to speak freely and offer opinions in class, and so they were unprepared for the demands of PBL:

Alice[A]: The Asian schooling system is different, the term they use is spoon-feed, they don't make you think.

Ruth[A]: Our education system has not taught us to speak out, speak up in class, it has not trained us to think on the spot, it's more spoon-feeding for us during class sessions, it's very passive, everybody listens to what the teacher has to say.

All three told me that they silently watched and listened to the other students in order to understand what PBL required of them. For these students, doing PBL was a process of cultural adjustment and learning to speak out in class. However, this was made more difficult due to the discussion practices

of the local students, such as the speed of their speech, their use of Australian colloquialisms or slang, and their use of humor.

> **Carol[A]:** The local students, they know a lot and can think really fast. . . . [T]hey gave responses to each other very quickly. I didn't have a chance to join in. It was difficult especially when local students talk and relate the discussion to things they know, that I might not understand. . . . Sometimes I was embarrassed because I couldn't one hundred percent enjoy the discussion. This was because some of the others were close and friendly all the time and with PBL I got nervous, maybe this was because I wasn't close friends with the group.

This complex state of affairs was not mentioned by any of the local Australian students. Only two local interviewees referred to the possibility that the international students were quiet, not only due to their passive personalities but also because of their "language barrier." Therefore, approaches to including these students were directed toward individuals:

> **Cathy[A]:** It was up to the rest of the group to help her with that and to try and deal with that.

> **Peter[A]:** A couple of times the louder people tried to stop and actually ask the more passive people for their input.

Some students experienced a shift in their role. The social environment eventually enabled one international student in Australia to participate in discussions. She described how her initial discomfort with participating was eased by the friendships she eventually developed with some group colleagues:

> **Alice[A]:** Once you get to know each other better, even though you don't know anything about the topic, because you're comfortable with each other and you can—you just talk about something else, you can ask questions and you get to share your opinion because you are comfortable, with them, so it's easier.

In contrast, other international students in Australia continued to feel excluded. One employed her own invisible strategies to participate, while another looked forward to being in a different group in Semester 2:

> **Carol[A]:** I was participating in my head, I listened and followed the discussion and joined in when I could. Sometimes they were talking about other things, not the PBL. While they were talking, I was thinking about the topic and working out what I wanted to say about the PBL. . . . I waited for the dead air [i.e., when no one else was talking for a moment].

In contrast, Fiona, an international student in Ireland, had no difficulties with being part of the conversation and was one of the dominant voices. She had done her secondary schooling in a British-run school in her home country, was used to speaking and thinking in English, and had experience in group work and group discussion. She told me that she found her group colleagues "nice and friendly."

Discussion

As noted in the introduction, PBL is based on collaborative learning principles, including all group members' active participation in group discussions (Dolmans et al., 2005; Hmelo-Silver, 2004). Furthermore, PBL is designed to foster the development of leadership skills, principally through students rotating leadership duties among group members (Kwan, 2009). In contrast to this ideal situation, our study and others report discrepancies with PBL in practice.

As part of our larger investigation into students' constructions of PBL groups, this essay addresses students' understandings of dominance and silence within PBL groups. Australian and Irish first-year dental students explained group development as a natural process of each person finding a suitable niche. This occurred early in the semester/term and was the result of people's usual or typical behavior in PBL activities. The most noticeable aspect of students' accounts was the presence of the dominant people and the quiet people. Dominance and quietness were described as oppositional qualities and were regarded as a normal part of any group composition. However, this assumption led to the acceptance of group members being leaders or followers according to their tendency to be loud or quiet, respectively. The assumption also underpinned/enabled social practices that privileged some group members and marginalised others.

Little has been reported in the literature about students' roles in PBL groups. One of the first papers on group dynamics in PBL included a "balance of task and group-building roles" as part of a list of ideal group dynamics but did not expand further on this topic (Tipping, Freeman, & Rachlis, 1995, p. 1051). In a study of criteria for assessing group function, role sharing was listed as a desirable criterion: an "outstanding" group "frequently and appropriately" rotated roles, but a "poor group" underwent no role changes (Willis et al., 2002, p. 496). However, there was no other mention of roles in the Willis et al. paper. A detailed investigation of equity in student groups reported that group members "self-selected" into particular roles and that no roles were "explicitly assigned" (Duek, 2000, p. 92), just as in our study. Duek (2000, pp. 91–95) observed that roles included group leaders who led discussions and whom she described as "discussion

dominator/discussion coordinator" and with behaviors such as "aggressing" and "hypercontributing" or "withdrawing/ following" and "hypocontributing," which compare to the dominant-quiet roles and active-passive behaviors described by students in this study. Our participants believed that a natural part of any group structure was this basic dichotomy of "dominant" or "vocal/active" and "quiet" or "passive/follower" members and that this shaped group function.

In our study, the dominant people became group leaders who directed the group discussions and decision making. The leaders themselves regarded their leadership and guidance as benefiting the group. The majority of students believed that leaders were born or matured, and so the leader would be someone "naturally" suited to the role who had the necessary skills and attributes. In Ireland, this belief informed students' expectations and their subsequent evaluations of the chair, a role that was regularly rotated within the group. They believed that the chair ought to lead the group, and if the chairperson was not a natural leader, then he or she was a "weak chair" who could not match their expectations of the role. Therefore, there was an inevitability to students' beliefs that rotating the chair was ineffective at maintaining order within the group. The exception to this belief in natural leadership was a mature-age Australian student who had previous team leader experience in a professional setting; he viewed leadership as a set of learned skills.

There is little in the literature about leadership in PBL groups. Although the ideal criteria listed by Tipping et al. (1995) included leadership and its style and effect, they did not address leadership in their discussion even though it was one of the three items that students had identified as important for group success. A detailed study of leadership in PBL groups described what the authors labeled as "collaborative" and "heroic" leadership: the former being situational and shared and the latter being a personality-driven model (Palmer & Major, 2004). As with the students in our study, Palmer and Major (2004) observed that the heroic model was used by some of their students. The notion of fitness for leadership and a sense of obligation to lead, as expressed by our participants, has been reported in other studies where students have explained that they took control of their PBL group in the belief that they were best suited to this task or were natural leaders (Benbow & McMahon, 2001; Duek, 2000).

In addition to the presence of dominant people, our participants believed that a natural part of any group structure was having "quiet" or "passive" members. However, students did not criticize the quiet people; they said that although the quiet people were not actively involved in directing or decision making, they were engaged in learning, as evidenced by their occasional contributions. Some of the quiet people in our study explained that silence was used for learning during

PBL and about PBL. Other in-depth studies into PBL have revealed that silence can be a learning space and strategy and have indicated the importance of valuing silence in PBL. For example, students may choose silence to learn from others, to analyze others' contributions and compare/contrast with their own understanding, and as a strategy to manage knowledge conflicts (Jin, 2012; Remedios et al., 2008b). Silence can also be a means of students acculturating themselves to PBL through observation and reflection (Remedios et al., 2008a; Imafuku, 2012). Authors have also suggested that silence in PBL has a discursive and social use: it can enable turn-taking by creating space for others to speak, provide openings for feedback and commentary, and enhance respect and accord among group members (Jin, 2012; Imafuku, Kataoka, Mayahara, Suzuki, & Saiki, 2014).

Yet students in our study were sometimes dissatisfied with being quiet and explained that quietness had been imposed on them, resulting in frustration and resentment. This occurred with both local/domestic and international students. Some students were silenced because they felt that their contributions were rejected, so they gave up trying. Other students, local/domestic and international, were excluded from discussions by various group practices. These included members speaking loudly and quickly so that there was no entry point for others, using slang and colloquial English, using humor that was not understood by all group members, and combining PBL-oriented talk with social talk that excluded others. The sometimes mistaken assumption that people were quiet due to their own preference had underpinned/enabled these social practices that privileged some group members and marginalized others. Furthermore, the same assumption meant that any attempts to manage or reduce silence were aimed at individuals and increasing their participation, such as periodically asking the quiet people if they wanted to say anything or if they agreed with decisions. Therefore, as result of mistaken assumptions about silence and dominance, power and participation in PBL groups was restricted. PBL groups became sites of unintentional exclusion.

When the results of this study are taken together with other explorations of silence (Imafuku, 2012; Imafuku et al., 2014; Jin, 2012; Remedios et al., 2008a, 2008b), it is clear that learning to value silence is just one element of the need to rethink how PBL is implemented. The complementary element is to be aware that silence can be imposed on students unwillingly by erroneous assumptions and exclusive social practices. However, we are of the view that change may be a slow cumulative journey and not brought about with a single remedy. The apparent naturalness of people's ideas and assumptions about leadership and quietness means these ideas may not be easily challenged and disrupted in order to change behavior. The problem may lie as much with tutors'

beliefs and assumptions as with those of students. We suggest that an approach to changing ideas is to develop training for tutors and students in cultural and social knowledge and skills to facilitate greater inclusivity in PBL. For example, at our school we have recently introduced sessions on culture, health, and health care, which not only examine how culture impacts health from the patient point of view but also explore dentistry and dental school as cultures. These sessions include analysis and discussion of students' previous educational experiences and potential differences in students and staff roles in supporting their student learning. We introduce the notions of visible and invisible culture via the concept of the "culture iceberg" (originally proposed by Edward T. Hall in 1976 and now widely used) and stereotypes and assumptions. In the context of this study, a student's quietness is visible behavior (i.e., the top of the iceberg), from which we may wrongly assume that the student is naturally quiet, or we may stereotype the student (e.g., quiet Asians). We discuss the need to look for deeper cultural and social reasons for classroom behaviors (i.e., the lower part of the iceberg): is this student's behavior due to a particular view of politeness, such as not interrupting, combined with the social setting, which means that the student has less opportunity to speak among people for whom jumping into the conversation is acceptable? We intend for students to see how the social interaction of these two cultural ways will mean that some students are excluded and some dominate. This strategy is yet to be evaluated for its impact on groups.

Another part of the remedy, we suggest, is that changing PBL group practices around silence might be further supported by directly addressing tutor and student behaviors; for this to happen, specific guidelines about group interactions could be provided during tutor and student induction and training sessions. However, the issue of whether and how to rotate roles is problematic, as shown by our results relating to the chair role in Ireland. It is possible that training tutors to explicitly model appropriate behaviors and teaching tutors how to intervene in group dynamics to support the chair might be effective. We don't believe that having tutors identify "reticent students" explicitly would help, as this risks situating the problem with the individual and devaluing silence. Further, it would be possible to transfer to the PBL setting some simple whole-class teaching strategies designed to facilitate participation but that employ silence positively. One example is the well-known "think, pair, share" technique whereby students do not verbalize their ideas until they have thought individually and then shared their ideas with another student. This technique introduces the notion of silence as thinking and idea-formation time and also gives students a "rehearsal" space for presenting their ideas to the larger group. Such strategies may ensure that all students have the opportunity to have a voice and that silence can fulfill its generative role in learning.

While this study offers the insights of ethnographic research, it is limited due to the situated nature of the research and the scale of the study. Therefore, any generalization to other sites must be done with caution. The focus of our study was students' practices and explanations; tutors' roles and explanations were not addressed and would add another dimension to the story.

Conclusion

Through an ethnographic investigation of PBL groups in practice, we have shown how group roles and function developed in ways that were not always compatible with whole-group collaborative learning. Students assumed that groups were naturally composed of a balance of dominant and quiet people who would become group leaders and followers. At times, the quiet people's silence was not seen as dysfunctional; it was considered by both dominant and quiet members as contributing to learning. However, this assumption of quietness as natural enabled the social practices that privileged some group members and marginalized others; silence became the consequence of exclusion. Therefore, power and participation in decision making in PBL groups was restricted to dominant group members.

This essay adds to our knowledge about PBL groups from the inside by illustrating the dual nature of silence during PBL. It can be both a generative element of a PBL group, as a student learning strategy, or it can be a negative element of a PBL group, as a result of exclusion of students through everyday social practices. The implication for practice is to raise tutors' and students' awareness of how normal interactions may be noninclusive and may preclude some group members from collaborative engagement as well as encourage tutors and students to make use of strategies that recognize the value of both silence and activity.

Acknowledgments

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Vicki J. Skinner, BA BEd(Hons), PhD, is a senior lecturer in the Adelaide Dental School at The University of Adelaide, Australia. Vicki is the Coordinator of the clinical communication skills program in the Bachelor of Dental Surgery program. She has been involved in designing, implementing and facilitating problem-based learning and other case- and inquiry-based learning activities at the School. Vicki's research interests include communication skills, higher education, problem-based learning, and group work.

Annette Braunack-Mayer is professor of health ethics in the School of Public Health at The University of Adelaide, Australia. Annette was previously head of school from October 2010 to October 2015. She is a bioethicist, with considerable experience in the use of qualitative research methods to explore public health issues, including obesity, immunization, and pandemics. Annette also contributes to a program of research in Aboriginal and Torres Strait Islander methodologies and chronic disease prevention.

Tracey A. Winning is an associate professor in the School of Dentistry at The University of Adelaide, Australia. She has been involved in implementing, developing, and evaluating inquiry-based learning activities in the revised BDS curriculum, which involves one integrated stream per year. Her research focuses on curriculum development and evaluation, research into students' experiences in different learning contexts, and procedural skill learning. These projects involve collaboration with colleagues internationally, e.g., from Otago University, University of Manitoba, and The University of Waikato.