CLOSING COMMENTARY

Observations from the Outside

Fledgling Researchers’ Perspectives

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INTRODUCTION

New insights tend to arise not necessarily by producing new knowledge, but often through reorganizing existing information in an alternative way. In this chapter we attempt to “reorganize” the information and work presented by this particular sample of the academic community to see if our perspective as early career scholars in education research can provide new insights. We are in a special position as outsiders, which we characterize in this case as not being the editors, not being chapter authors, and up to this point not specialized or established in the field of problem-based learning (PBL) or interactional research. Our view, therefore, is that of fledgling academics entering fields in which the scholars who have written the contributions in this book have been deeply immersed, communicating our thoughts as new readers. This is not meant to be a summary or synthesis; neither is it a book review or expert criticism, nor an instruction on how to read or interpret the chapters. In some way, this is a report of our struggle to understand and learn what this field is about, and therefore we have chosen to call our ideas observations. We are aware that what for us may be novel insights may be self-evident for the expert reader, but we also hope that our outsider perspective is helpful to readers in developing their own views and perspectives as well as to the authors, so we can contribute in our own way to moving the field forward.

What all the chapters have in common is some sense of ethnographic approaches (Green & Bridges, 2018; Castenheira, Crawford, Dixon, &
Green, 2000), an interest in social interaction in learning, and a common thread of PBL. We have followed this thread by approaching the chapters with ethnographic eyes, with a general inquisitive question: What is going on here? One great contribution that we found, and what all these chapters have helped us to understand, is that PBL is very much about learning to learn, working with people, and dealing with obstacles in completing a structured process of inquiry (Lu, Bridges, & Hmelo-Silver, 2014). The methodology on display provides in-depth examples and observations of how this learning-to-learn works and why it works. It does so in a way that outcome-based and pre- or postresearch designs would make difficult to measure, therefore inhibiting certain discussions and innovations. When taken together, the chapters help promote how process-based methodological approaches, studying student experience, and taking the student seriously as either an agent, individual, or interest group in one’s own right can reveal these valuable perspectives.

In what follows we explore some reorganization and reinterpretation of the chapters, which we have linked to the key observations detailed below. The observations are explained and illustrated with reference to the chapters, basic familiarity with which is assumed. The observations themselves only make reference to chapters in this book.

**Observation 1: The research method and outcome show that the very research approach itself is a clue to incorporating and applying the research results into pedagogic innovation.**

Two illustrative points explain the dynamic we have observed when researchers explore educational practice in action. First, the researchers, by subjecting students to their research questions and data collection, force a reflective process and student-educator interaction that may otherwise not have occurred. Rather than viewing this as problematic and as what might appear to be a criticism on the validity of the research, we present this as a clue and supporting argument for a theme that recurs throughout the chapters: the necessity for students and tutors to prepare for and reflect on how they are learning. Second, there is a recurring tension in the balance between preparing the student for learning in a natural setting that anticipates moments of struggle, conflict, and negotiation and a temptation to avoid those events in the name of planned learning for achieving intended or planned learning outcomes (Bereiter & Scardamalia, 2008). This problem is familiar to inquiry-oriented educators: too much of one can mean
a devolution into prescriptive group work by overscaffolding or messy, competitive dysfunctionality due to lack of preparation and guidance. Both of these observations are elaborated on below.

**Self-ethnographic potential, personal development, and social skills in PBL:**

*ethnographic research or action research?*

Learning in an inquiry-based environment and in PBL processes is synonymous with learning how to learn individually and collaboratively with others. A recurring conclusion in the book is that if students were more aware of social rules, group dynamics, behavioural patterns, and motives, it would lead to an enhanced PBL experience. This comes down to communicative competence (Cazden, 2017) and social skills, which cannot simply be transferred from a textbook. This idea also asks one to consider whether the PBL collaborative process is something that needs to be taught to the students first, independent from content.

Consider Almajed, Skinner, Peterson, and Winning’s extensive review of collaborative student learning experiences (Chapter 5). The results provide an overview of suggestions for dealing with mixed groups, individual differences, and the function and meaning of knowledge conflicts. As part of the data collection, students were asked to reflect on their experiences and questioned about them in person and via email. One of the outcomes of the research is the advice that students should be encouraged to reflect more on their learning, as the researchers found that students often do not know enough about collaborative learning (CL) or are unaware of the potential of social learning processes. It is striking that in the end, reflection is both the method and the advice researchers give for better CL. In other words, the research itself ended up being a pedagogical intervention. The research result was a genuine inquiry into learning and created an exchange of views between students and educator-researchers. This means that teaching students about CL could be done in nearly the same way as this research was conducted, like a type of action research. The intervention and interaction that were the result of the research enhanced the learning experience to such a degree that reflection on these produced valuable additional outcomes and implications. A possible next step would be analysing the research performed and developing a permanent integration not of the results, but of the ethnographic methods, into CL pedagogy itself. One way of understanding this is letting ethnographic research inform a student-centred understanding of learning.
One student discussed in this chapter really stood out to us and provides a good example of how to use direct engagement with student experiences in CL pedagogy and presentation. The student said that individual learning was slower but guaranteed, while group learning was a gamble with a high pay-off. This seems to be a very significant notion because it allows a reframing of CL pedagogy into thinking about how to make CL worth the risk to the students or give them confidence that it will pay off. Perhaps the potential for failure without affecting the final grade should be part of how CL is presented, and some room for individual learning should be guaranteed in the curriculum. Explaining this to the students in advance and designing the learning that way could be important in its success. Future research could therefore focus on examining how to engage with students’ willingness to take risks in learning.

Another illustration of this observation is found in the study by Imafuku et al. (see Chapter 7), in which they report extensively on social interaction in learning and conflict management during collaborative interprofessional learning. We note there how the research can constitute an intervention in PBL learning. Researcher engagement with the students is likely to initiate reflection on learning that might otherwise be absent. The extensive treatment of conflict in a collaborative interprofessional setting, highlighted in such a detailed fashion thanks to the qualitative approach, provides new lessons for how group interactions function to promote and inhibit learning. In terms of implications for practice, it could essentially end up arguing for teaching students basic skills such as how to hold a meeting, divide tasks, manage conflicts, and social skills and psychology in general. These skills have little to do with the disciplinary content knowledge that the PBL process is applied to but are necessary not only for PBL to function, but also, arguably, for professional life and lifelong skills in general (Bereiter & Scardamalia, 2008).

If we as educators are going to promote a focus on social knowledge and efficacy and combine those factors with reflective self-ethnographic learning practices, then what we are talking about here is education formulated and enacted in a way to promote personal development, independent of disciplinary content. While keeping ethics and sensitivity in mind, imagine how personal and educational it could be to confront students with the detailed ethnographic data arising from this type of research, giving explicit examples of recognizable student behaviour and conflicts and reflecting on them together. When the line between the researcher, the educator, and
the student becomes hard to distinguish, we will have reached the highest standard of teaching, a complete engagement with learning on both the students’ and educator’s sides.

So if the pedagogical potential is in this research, to whom and when should this lesson be applied? Should students be educated about social and collaborative learning in a preparatory sense, or instead of preempting learning, should we educate the educators to scaffold and guide learning as it happens, making visible the learning process to those participating in it? In the following, we further expand on this question in light of the interplay among interactional research designs, findings, and pedagogy.

*Structured and strongly scaffolded learning versus risky liminality with high pay-off potential.*

Ideally, we would want students to make as many managed mistakes as possible while they learn in college, so that they can minimize the occurrences of inevitable errors when their performance really begins to matter in professional practice.

Svihla and Reeve (Chapter 4) discuss issues in the pedagogy of team-based learning in a project-based setting. Particular about this chapter is that it analyses the early stages of the project-based teaching process, namely the framing, when groups are introduced to their assignment, then follows them to see how it sets the stage for later events in the project. One of the most interesting findings is how an open-ended framing provided a large space for developing ownership with a consequent high level of engagement. As a result, the project moved away from educator control, raising the stakes, while creating high pay-off potential.

As high levels of engagement and ownership take place, they pose a novel educational situation in which a student gets too deeply engaged and the project becomes too personal for comfort. Terms such as “engagement” and “ownership” are often thrown around casually, but this chapter gives a particularly vivid sketch of how they can actually change learning and its outcomes. The chapter shows that when the student gains ownership, the learning process turns into something a lot more meaningful, which the student may not have been prepared for. At the same time, when the teachers achieve learning ownership in their students, they seem to start to worry about their own role; the teacher here lost some of the ownership to the student and therefore some of the control that teacher was used to having in the high school setting of the study.
This is a great example of the problem of teaching versus experiencing learning, as both students and teachers negotiate control, pulling and pushing. In extreme cases students may either seek to take control from the educator or lean on the educator to avoid responsibility for learning. In the fervour of the educational project of problem design and facilitation, it is easy to lose the liminality and uncertainty that PBL could and maybe should entail, as the tension in this chapter shows.

Another good example of this issue is McQuade et al.’s study (Chapter 9), which focuses on social loafers to illustrate key interactional and social aspects of PBL. Social loafers are traditionally considered to be a prototypical handicap to learning in the PBL method, as indicated by the authors. The chapter provides clues to how dealing with this phenomenon can enable a positive learning experience. If the risk of social loafing did not exist at all, the learning moment in dealing with it would also not be enabled, and an important educational opportunity would be lost for both the loafer and those dealing with the issue. Both for tutors and students, this chapter reemphasizes not just the importance of designing learning, but also the importance of the PBL experience as personal development opportunity and the high potential for students if they reflect on and analyse their own behaviour and interactions. Gaining insights into how students deal with social loafers and understanding the behaviour and social processes behind them could constitute a learning moment in managing teamwork and collaborative communication, which a facilitator could either let go and allow to play out or take the initiative and push for group reflection.

The theme of liminality in learning is discussed in depth by Savin-Baden (Chapter 11). Liminality is a broad concept but in these cases shows itself as the moment in which full team engagement with a task is at risk of breaking down or the moment when group members need to define their task/project without strict prescriptions, seeking to enable integration with their interests and motivations. Both these moments entail risk, as failure to deal with them can lead to severe problems, either immediately or later in the process. The qualitative methods and data used in the chapter illustrating this observation are perfect in showing us how liminality in learning occurs and should be appreciated, teaching us about the balance of structured and risky learning.

Observation 2: There may be potential in reframing or at least noting connections with the fields of social psychology, organisational
Given that problem-based, project-based, and interprofessional education generally tend to rely on team efforts, research into group dynamics and interactions is a logical direction to pursue. First, if a researcher is exploring how the tutorials proceed, how team members interact, and how their work and personal development are affected by research into group dynamics and interactions, then as researchers, we wonder how this work is to be distinguished from organizational studies and social psychology. Second, reading this volume moved us to peek into a black box as we consider technology and its use in educational research. Speaking of technology in education as a general topic or approach may be too simple and obscures important distinctions in the use and character of technology in daily life, social interaction, work, and education.

**Learning about group dynamics and social psychology in education.**

Like a PBL facilitator, would not the HR professional, supervisor, or consultant equally observe employees in their functioning and stimulate correct behaviour and professional development? The fact that PBL has been arguably most successfully employed in professional and interprofessional education in higher education to prepare students for the workplace, evidenced by the studies here, should reinforce this comparison. The major difference is one of emphasis: in the work situation the priority should be on the product or service rendered, and in the educational situation it should be on professional development. Reflecting on what is involved in PBL and innovative pedagogies, it should not be too far-fetched to envision a PBL specialist coming into a government or business context to facilitate professional development or conflict management activities. So in reverse, why shouldn’t lessons from the study of those contexts and fields be applicable to the goals of PBL research? The consequence of this close association is twofold. On the one hand, it means literature from those additional fields could be relevant in building and enhancing the search for learning about and developing inquiry-based learning. On the other hand, it means the literature and methods in this book are highly applicable to those other fields, opening up opportunities for collaboration and broader exposure to academic communities and beyond, with implications for academic reach and impact.

A key illustration of this point is the wonderfully original focus that Skinner, Braunack-Mayer, and Winning (Chapter 2) provide in applying...
qualitative analysis to illustrate the use of silence in social practice as an interactional phenomenon. They extend the implications of the study to leadership dynamics, role taking, and learning styles, all of which have extensive fields of their own in organizational and psychological schools of research. The explicit focus on silence itself, however, creates a situation in which PBL becomes more of a context for the research than a research target itself. The study of silence is more important to the results and the research than the PBL context. The point in this case is that there is no clear difference between the PBL context and any other meeting setting. Rather than being a limitation due to weak applicability, a more explicit distinction could be made between the contribution of this type of work to teaching PBL and the contribution it makes to the understanding of group dynamics and social psychology as a whole.

Another illustration of observation 2 is the Wiggins et al. chapter (Chapter 6), which focuses on analysing introductions and first contact in PBL group work and describes aspects of self-presentation, interprofessional interaction, group processes, and the group formation stage. This chapter, like the others, situates these in the PBL context, but it is striking that the outcomes and phenomena under study are clearly not unique to that context.

Likewise, Schettino (Chapter 3) presents a deep analysis of social interactional patterns and how they affect the positioning and experience of a learner. This is extended into arguments and opportunities for social justice and empowering marginalised groups. Leaving aside the discussion on what feminine values are and the role of feminism in this research, the data and results can stand on their own in endorsing a shift from teacher-centred to PBL pedagogies, helping to reconfigure power relations away from problematic traditional authoritative teaching dynamics. Although the approach is useful for all learning, those particularly vulnerable to authority for cultural or social reasons, such as women in the historically masculine mathematics pedagogy and disciplinary field, can benefit from it because of its implications for agency, relational support, and empowerment. This result could extend to racial and other types of marginalized groups in entirely different situations and supports a normative and emancipatory argument for the intercultural and international use of PBL and inquiry-based pedagogies as a whole.

These insights could be considered so profound that the interest in basic questions and details of “how” and “what” in PBL may seem to
fade into the background. The qualitative data allow for these insights to appear in a way that was only theoretical before, having consequences for the debates about and justification for educational systems and approaches in relation to, for example, larger questions in educational philosophy and cultural criticism. Schettino may have been too modest about this. We look forward to reading more research along this line of inquiry.

What these examples show is how the work performed in education researchal is strongly related to other fields and practices and the potential that the educational research in this book has to benefit those within and outside the field, not just in the classroom.

Technology as a monolithic concept.

By itself, the term “technology” conveys too little meaning, and we should ask deeper questions about what exactly we are referring to when using it. To illustrate this point, consider the studies presented by Hendry, Wiggins, and Anderson in Chapter 8, about phone usage; Lai, Wong, and Bridges in Chapter 10, on Clickshare™; and Lajoie et al. in Chapter 12, about online learning platforms, all on technology in education. Chapter 8 reveals verbal and nonverbal responses to phone usage in a PBL setting. The authors’ analysis of microprocesses presents social interaction during the learning process, rather than social interaction in direct relation to it. Therefore, framing the work as a study of “technology” may be too broad. Thinking about what technology is and what it really does, it could possibly be understood otherwise as how technology enables access to, and engagement with, information or persons outside of the predefined meeting space of the group.

Technology is complicated and broad, and indeed a pen, laptop, whiteboard, and glasses are also “technologies.” Perhaps the real issue is not technology itself, which is quite a monolithic term, but what unique services and resources the phone in this study enables and what that does for the group’s functioning: information and communication outside the group space, which would otherwise have been limited to the physical space, now starts to have an effect, its agency enabled and conducted through the phone. This communication and information can either be found more interesting and important than the group and its task or be utilized to enhance the group functioning and its task. For a similar reason, reading a novel or writing a personal letter during a meeting can be problematic, but consulting a reference work or writing minutes is not.
In Chapter 10 on how screen-sharing software may facilitate knowledge coconstruction and collaborative processes in PBL, a similar issue emerges. The Clickshare™ appeal for PBL is clear: being able to share your computer screen with the group is convenient. But once again, what we understand as technology should not be a black box, an opaque tool partaking in our human interactions. Clickshare™ may be better understood not just as a technology, but as a tool that has specific relations to the work process, such as providing efficiency improvements or enabling an act not available before. This is complicated by what people choose to show in their meetings, which could also have been shared via other media such as PowerPoint presentations, by writing or drawing on the board, or by simply connecting laptops to the beamer. In other words, just like the problem of considering phones as a static and constant variable, Clickshare™ is not just a constant variable that alters educational processes like mixing sugar into tea, but instead creates and enables new connections, almost as an agent itself, which can be evaluated individually and compared to other technologies and actions that make similar connections.

The last illustration to support the idea of a deeper engagement with the use and understanding of technology is from Chapter 12, which offers a descriptive report of the developmental processes and pathways of technology-enabled PBL programs. The innovation presented in that chapter is the technology's allowing one tutor to administer multiple groups and hence also enabling a specific act or efficiency not available before. These examples show technology is deeply intertwined with human interactions and forms a complex field of potential actions, process modifications, and behavioural enablers that impact group performance and possible actions, ripe for deep reflection and qualitative inquiry, as exhibited in this book.

Observation 3: Chapters address the gaps in methodological approaches but still need more future interactional studies to realise PBL’s aspirations.

The aforementioned unifying thread of this collection of research studies is an answer to the call to develop methodological approaches that enable a more in-depth exploration of the “inside” of PBL, raised by Jin and Bridges as a result of their systematic review of qualitative research in PBL (see Chapter 1). The methods in use for the studies presented in this volume are designed to provide close analysis of participant interactions in situated contexts in order to enhance readers’ understanding of the
learning and teaching processes in inquiry-based learning (Heap, 1991). The detailed descriptions of the methodological approaches allow other researchers, not particularly in inquiry-based contexts but in education in general, to replicate these studies. Video recordings used in many of the studies are considered as artefacts, which captured observable interactions of particular actors bounded in a moment in time in a distinctive setting (e.g., Baker, Green & Skukauskaite, 2008; Green, Skukauskaite, Dixon, & Cordova, 2007; Lemke, 2007). Interviews can be viewed as narratives providing insights from the points of view of the participants of the particular phenomenon under study, mediated by questions from the researchers (Fontana & Frey, 2000). Studies drawing on field notes, journals, and other artefacts all inscribe the lived experience as a historical phenomenon (Evertson & Green, 1986). These sets of records depict human activities situated in a particular social ecology (Erickson, 2006) and provide emic perspectives on common local knowledge and shared cultural practices (co) constructed and/or (re)negotiated through social and discursive interactions (Edwards & Mercer, 1987; Bridges, Botelho, Green & Chau, 2012; Bridges, Green, Botelho, & Tsang, 2015; Castenheira et al., 2000; Green, Skukauskaite, & Baker, 2012).

Given their predominant focus on student learning, a primary extension of some of the research studies in this chapter would be to analyse the PBL interactions from the perspective of the teachers, tutors, or facilitators. These multiple angles make it possible to triangulate perspectives, data, analyses, and interpretations (Green & Chian, 2018; Hammersley & Atkinson, 1991; Denzin, 1978). Another extension would be to explore how integrating PBL with the students’ academic lives becomes consequential to their professional lives, in terms of professional and social skills and identities (Putney, Green, Dixon, Duran, & Yeager, 2000). This could be achieved by extending the exemplary methodological work done here in studying classroom interactions to professional settings, ideally in longitudinal or comparative studies.

However, despite the richness of these resources, the studies in this volume acknowledge the issue of generalizability and the limits to certainty of video-recorded moments and a “database” of collected artefacts as well as the responses to the interview questions (Baker & Green, 2007). Readers will wonder, as we did, about the meanings behind the actions, intertextual references, and contextual cues embedded within the dialogues as the research teams engaged with the texts (Bloome, 1992; Bloome & Bailey,
1992; Bloome, Carter, Christian, Otto, & Shuart-Faris, 2004; Gumperz, 1992). A challenge or suggestion to the authors for future work in extending their studies is to ask what had happened in the past that set the stage for the event under investigation and what the curriculum designer(s) (e.g., teachers, facilitators, tutors) would like to happen in the future. This frames the need to trace the development of phenomena (i.e., learning, teaching, agency, identities, etc.) over a period of time across contexts (Green & Bridges, 2018). We suggest capitalizing on the accessibility of archived data (video, audio, written artefacts) for multiple (re)viewings in order to extend and/or expand research work from multiple angles of viewing or perspectives (e.g., Green, Chian, Stewart, and Couch, 2018; Goldman, Erickson, Lemke, and Derry, 2007; Derry, 2007; Roschelle, 2000). If new data could be linked to previous data and also be made available and ready for future research over time, a corpus of PBL data could be built. This would not only enable convincing generalizations in the future but facilitate further extensions of the many valuable ideas and observations that the approach enables and that have been explored here.

More important, such efforts, in order to work, require a transdisciplinary and multifaceted approach that reflects the nature of project-based learning, PBL, and interprofessional education. To accomplish this, we recommend promoting high standards of collaborative learning and reflection as advocated by PBL. This transdisciplinary research team could dig deeper into these questions and perhaps see further development in designing integrated learning activities for learners, as suggested in the findings of the studies in this book. We realize that proposing a shared corpus of qualitative data and longitudinal studies may appear naïve and idealistic, but it would help address concerns that multiple authors have expressed about their limited datasets. A corpus would be in a much better position to make assertions than a literature review that collects a number of heavily contextualised claims that even the authors themselves regard as nongeneralizable. We hope researchers in the future can learn from the work done in this volume and dream up such collaborations and projects on a large scale.

**CONCLUDING REMARKS**

The idea that a process-based method of inquiry in research is complementary to a process-based pedagogy should not be surprising but could be an
important addition to the self-consciousness of the researcher. The lessons on methodology in this book could therefore be turned into lessons on pedagogy. The familiar problem of how much a student should struggle to learn, how much room for failure and difficulty should exist, also rears its head. In particular, we noted that ownership and engagement do not just enhance but can fundamentally change learning. Investment in learning means more risk, explaining the sense of high-stakes learning, and why it can appear daunting but also provide a high pay-off.

Some of the questions and findings presented in the book do not always seem to pertain to just education, and in some cases they even appear peripheral to it. We argue then that this is an indication of their interdisciplinary potential. PBL, ethnography, and interprofessional education are inherently interdisciplinary, so why should educational research itself not also look beyond its own community? The potential for expansion and collaborations left us feeling eager and excited. The work, we feel, is transferable, having potential for going further afield in its applicability, impact, and empirical value. The question of the philosophy of technology and its consequences for research framing and direction was also raised, showing that it may be valuable to consider how we define technology in our work, what we attribute to it, and whether we should look deeper and wider at what it represents rather than leaving the open question of a monolithic idea of technology unanswered.

The qualitative research methodologies presented in this volume have provided ways to explore the situated social dynamics and learning processes of learners in inquiry-based learning contexts (Heap, 1991) and could also be applied in different learning environments, such as the professional world. There is tension in the very feature that delivers strength to the studies; the detailed explanations of the particularities of the phenomenon also represent its limitations (Mitchell, 1984, Baker & Green, 2007). Questions remain: How do we then extend the time scales of the “bit of life” under study? How do we make its historicity and development consequential to future events? These questions lead us to look forward to future research studies from this community of scholars.

Finally, the process we undertook to answer our question—What is going on here?—through an ethnographic lens, and finding ways to (re)organize the information presented in this volume, enabled us to experience parallel activities that were under investigation in some of the chapters. To collaboratively work on a common task required us to
negotiate meanings as we (co)constructed our presented observations. Through our discussions of the shared and (re)negotiated differences in interpretations, influenced by our previous experiences and backgrounds, we expanded our understanding of the learning processes, (inter)cultural aspects, and group dynamics in an inquiry-based approach and in turn enriched our knowledge of teaching and learning, in general. Through this process, we not only learned the content but also learned from each other and about ourselves, as learners, entering as academics. Our experience through this process has resonance in our presented observations, a carillon of academic growth enabled by leading academic muses.

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