# Dialogic Intervisualizing: Rethinking Text-Discourse-Learning Relations in Multimodal Problem-based Learning

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**Abstract:** Examining the nature of digital texts in the developing contexts of problem-based learning (PBL) constitutes an expansion in research on dialogic approaches to learning in technology-rich, inquiry-based designs. This study adopts Interactional Ethnography as an orienting theory to frame the purposeful tracing of the unfolding knowledge co-construction processes across a medical PBL cycle. We investigate how these processes are interactionally accomplished in and across intertextually tied events where devised, generated, accessed, curated and appropriated digital texts are connected in webs of meaning. The concepts of multimodality and intertextuality from literacy studies provide explanatory theories to investigate how digital texts in the developing dialogic space are consequential the learning process across the phases of a PBL cycle. We propose the concept of *dialogic intervisualizing* to theorize these new text-discourse relations in inquiry-based learning.

**Keywords:** Interactional ethnography, multimodality, problem-based learning; facilitation

## Background

Given the socio-cognitive foundations of PBL with collaborative disciplinary knowledge co-construction occurring in small group dialogues, designing ethnographic, discourse-based studies to capture and analyze interaction-based learning processes in-situ is both logical and compelling. Attending to the processes of appropriation and development of curated and student-devised digital resources is critical because these resources provide access to, and structure information by embedding expert knowledge and skills in these virtual spaces (Savin-Baden, 2016); however, this is less explored. This study aims to trace participants' learning trajectories as facilitators and students engage in dialogic activity while utilizing multimodal resources.

## Approach

The study is theoretically grounded in Interactional Ethnography (IE) with learning socially-situated and discursively constructed across times, events and configurations of actors and artifacts (e.g., texts) (Green & Bridges, 2018). This perspective is particularly important in seeking to understand the dialogic relationship between social activity and collective-individual cognitive development (Derry et al, 2010). With specific reference to multimodal texts, we align with the notion of "intersemiotic relations" (Bateman (2014). One Year 2 medical student PBL group in the 6-year Bachelor of Medicine and Bachelor of Surgery (MBBS) program and their expert PBL facilitator (n = 12) form a *telling case*. The archived materials for analysis included video recordings of three face-to-face PBL tutorials (~ 2 hours each) and student learning materials collected across the problem cycle. Classroom videos were transcribed and PBL case materials (tutor and student guides; student generated materials) were collected. Recall interviews were recorded and transcribed and added to the archive. The team co-analyzed video recordings and transcripts to identify rich points associated with educational technologies and multimodal texts and to trace the consequential nature of these texts for medical student learning (Green & Bridges, 2018).

## Results and discussion

The 'rich point' (Agar, 2006) for tracing intervisual ties between texts was identified where a student (S11) was asked by a peer to draw a representation of the point he was seeking to explain. Figure 1 illustrates both the chronological relationship between texts and talk from Tutorial 1 and Student 11's (S11) initial whiteboard drawing attempt (Artefact 1) to the S11's final representation (Artefact 7) which was composed and circulated (unbeknown to the facilitator) after the final tutorial (Tutorial 3) and maps this to the phases of the PBL cycle of inquiry.
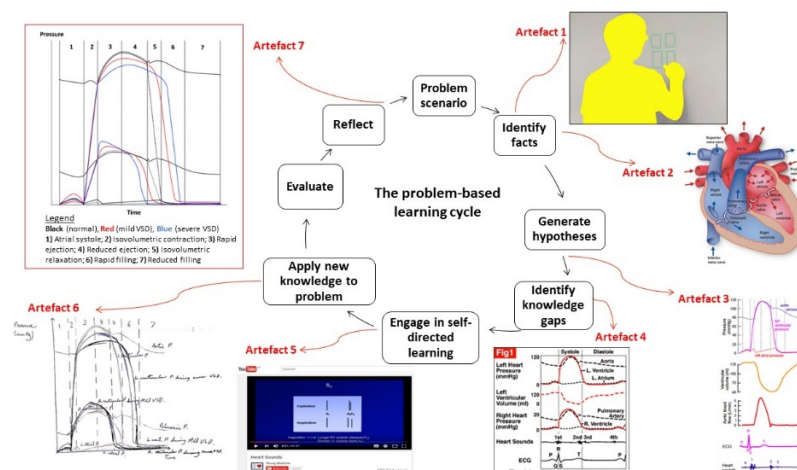
Figure 1. Dialogic intervisualizing across the PBL cycle.

Drawing on Interactional Ethnography, multimodality and intervisuality, we also expand the conceptualization of the role of visualizing (as a verb) in dialogic learning contexts such as PBL. Our argument is the ongoing process of student-led semiosis evident in the analysis above, whereby meaning-making is supported through the building of discourse ties between graphic representations as visual 'texts' and the actions proposed or made transparent by members in the PBL cycle (e.g., facilitator, students). The concept of *dialogic intervisualizing* recognizes the dynamism and centrality of new text types as contextualization cues to meaning and sociocultural processes. The concept also emphasizes not only student agency and autonomy in a fluid and dialogic learning process such as PBL but also the centrality of the expert facilitator in guiding the process of textual selection, curation, critique and final appropriation. We also propose that the concept of dialogic intervisualizing situates the event and textual processes, the developing composition and a meta-discursive set of orienting signals as well as processes of naming key phenomena.

## Conclusion

For this Interactional Ethnography, we have examined this process of facilitated textual production and interpretation within and across the dialogic learning space that is a PBL cycle in a process of dialogic intervisualizing. This analysis proposes theoretical insights through the proposed concept of dialogic intervisualizing which broadens the conceptualization of dialogic learning and social semiotic conceptions of intervisuality at their point of intersection in inquiry-based learning designs.

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