

Part IV

Case Study 3: Multimodality in Learning About Electricity with Diagrammatic and Manipulative Resources

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The data for this section is from an innovative primary school science classroom in Singapore that used Group Scribbles collaborative sketching software in conjunction with physical manipulatives (batteries, light bulbs, and wires) in an exercise to understand how basic electric circuits work. Wenli Chen and Chee Kit Looi describe the setting and data collection in Chap. 14, “Group Scribbles-Supported Collaborative Learning in Primary Grade 5 Science Class.” Four teams analyzed this corpus; the chapters are organized by certain similarities discussed below.

As reported in their chapter, “Identifying Pivotal Contributions for Group Progressive Inquiry in a Multimodal Interaction Environment” (Chap. 15, this volume), Chee Kit Looi, Yanjie Song, Yun Wen, and Wenli Chen analyzed their data using uptake and content analysis guided by a theory of progressive inquiry. Pivotal moments were identified along the uptake graph according to changes in content focus of activity.

Richard Medina also applied uptake analysis, but with an ethnomethodological orientation. His chapter “Cascading Inscriptions and Practices: Diagramming and Experimentation in the Group Scribbles Classroom” (Chap. 16, this volume), showed how group accomplishments are contingent on their material and interactional settings over time and across media and modes of interacting.

Kristine Lund, CNRS, and Karine Bécu-Robinault’s chapter, “Conceptual Change and Sustainable Coherency of Concepts Across Modes of Interaction” also examines cross-media and cross-modal interaction, but with a focus on coherence and conceptual change. Motivated by a theory of semiotic bundles, they examine how translations between media and modes can be taken as evidence for individual students’ evolving understanding.

Heisawn Jeong was also interesting in assessing understanding, but at the group rather than individual level. Her chapter, “Development of Group Understanding via the Construction of Physical and Technological Artifacts,” (Chap. 18, this volume), assesses “group understanding” as evidenced by the group’s collective diagrams and circuits, much as an archeologist assesses culture through its artifacts.

The discussion chapter by Suthers, “Issues in Comparing Analyses of Uptake, Agency, and Activity in a Multimodal Setting” (Chap. 19, this volume), identifies two major themes across the analyses: what evidences understanding, and practices of multimodal interaction across various media. He provides a little history with a related Group Scribbles case study that preceded the present one, discusses pragmatic issues concerning transcript sharing, discusses two points where the interpretations of the analyses differed in theoretically or epistemologically interesting ways, and then characterizes their different conceptions of individual and group agency and the distribution of activity in multimodal settings.