

# Communicative Patterns of Ccogenerative Dialogues between High School Students and Scientists



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## Research Motivation

- Scientists are normally deemed to be knowledgeable experts who hold higher status and power in society than do lay people/students
- The jargon and complex concepts of scientific language tend to be a barrier to communication

## Study Context:

- Participants: 2 Scientists, 3 science RAs, 2 education RAs, 18 high school students, 1 teacher of record
- Activities: 10 Saturdays afternoon (2 hours internship followed by 1 hour cogen)

## Theoretical Framework (Labaree, 2003)

- **Normative Learning Culture:** Students who tend to remain passive learners, without agency and freedom in choosing the type of knowledge and skills they need/want to learn. Students are usually perceived as immature, and are not used to communicating their wishes.
- **Analytical Learning Culture:** Promote the need for students to develop agency and critical analysis towards knowledge presented in the literature of the field, construct cogent arguments to justify their scientific reasoning.

No	Categories	Normative Issues (58.33%, 42/72)		Analytical Issues (41.66%, 30/72)		Total
		Example	%	Example	%	
1	Peripheral support	"The bus was not on time"	15.27 (11/72)	"Confused on proposal"	4.16 (3/72)	19.43
2	Oral instruction	"RA's show confusion"	15.27 (11/72)	-	0.00 (0/72)	15.27
3	Group communication	"Working in groups may not be beneficial"	4.16 (3/72)	"We don't feel like a team"	4.16 (3/72)	8.32
4	Personal needs	"No snacks"	2.77 (2/72)	"Weak presentation skills"	1.38 (1/72)	4.15
5	Scientific practice	"Not enough time in lab"	13.88 (10/72)	"Purpose of experiment not clear"	5.55 (4/72)	19.43
6	Scientific knowledge	"Confused calculations"	4.16 (3/72)	"Not knowing the units of measurements and conversions"	15.27 (11/72)	19.43
7	Scientific equipment	"Not getting equal amount of turns using the EC and PH tool"	2.77 (2/72)	"Trouble mixing with pipettes"	9.72 (7/72)	12.49
8	Pedagogical materials	"Data was inconsistent"	1.38 (1/72)	-	0.00 (0/72)	1.38

No	Categories	Normative Solutions (37.03%, 50/135)		Analytical Solutions (62.96%, 85/135)		Total
		Example	%	Example	%	
1	Peripheral support	"Get mentor's contact info"	11.85 (16/135)	"Clarify with bus driver"	9.62 (13/135)	21.47
2	Oral instruction	"Explain slower"	12.59 (17/135)	"Demonstrate technique for each group separately"	10.37 (14/135)	22.96
3	Group communication	"Meet with team members"	5.18 (7/135)	"Make sure everyone gets turns by asking to switch to their peers"	17.77 (24/135)	22.95
4	Personal needs	"Take breaks"	1.48 (2/135)	"Provide own [computer]"	6.66 (9/135)	8.14
5	Scientific practice	"Read textbook"	0.74 (1/135)	"More practice"	10.37 (14/135)	11.11
6	Scientific knowledge	"Test [students]"	1.48 (2/135)	"Look at conversion charts"	4.44 (6/135)	5.92
7	Scientific equipment	-	0.00 (0/135)	-	0.00 (0/135)	0.00
8	Pedagogical materials	"Double check our work"	3.70 (5/135)	"preliminary run through"	3.70 (5/135)	7.40