

Teachers' perspective on group dynamics

Chiara Andrà, Domenico Brunetto, Nicola Parolini and Marco Verani

Polytechnic of Milan, Department of Mathematics, MOX, Milan, Italy, domenico.brunetto@polimi.it

In groupwork activities, interaction plays a crucial role. We focus on two affective variables that frame interaction: one's own perceived competence ("I can") and the competence that one recognize to the others ("you can"). In this poster, we show different interpretations of mathematics secondary school teachers about students' "I can" and "you can" from observations of video excerpts of students working in groups. We discuss agreement/disagreement among teachers' interpretations.

Keywords: Group interaction, teacher noticing, perceived competence.

Interactionist research acknowledges that learning in mathematics occurs in and through interaction, which is framed by the students' "I sense" and "I can" (Andrà & Liljedahl, 2014). "I can" may prompt the student to intervene in a conversation. "I can't" may push a student to stay silent (see Andrà & Liljedahl, 2014). Each student may (or not) recognize a competence to each one of her classmates. Therefore, there is another dimension: "you can". "I can" and "you can" are seen as interior states, whilst utterances, postures, etc... are the external expressions of such internal states.

The teacher also plays an important role, intervening and driving the activity (Radford, 2014). Since emotions take a significant part in determining the outcome of the activity, it is crucial for the teacher to detect them and to react accordingly. Specifically, we aim at examining teachers' noticing (Sherin, Jacobs, & Philipp, 2011) with respect to the "I can"- "you can" frame. Our hypothesis is that becoming conversant with this frame allows the teacher to better ground her meaningful actions/interactions within the complexity of group activities. For example, in the case of a non-cooperating leader, it would be necessary to provide feedbacks that temporarily decrease her "I can" and increase her "you can"; indeed, in the case of a student with low "I can", it is important to provide

feedbacks that increase her self-confidence, but also increase her mates' sense of "you can" towards her.

Andrà, Brunetto, Parolini, & Verani (this volume) analyse a video excerpts (from a probability course to prevent gambling abuse), codified as follows: a point corresponding to the student under analysis is placed on the one of the four cells of the 2x2 table representing the internal states "I can" – "I can't", "you can" – "you can't". Dwelling time is represented by a circle: the longer the time, the bigger the circle. Transitions are represented by oriented arrows. The result is a trajectory.

The excerpt comes from a group of 4 grade-10 (15 years old) students: Alice (A), Barbara (B), Carola (C), and Dora (D). They are analysing a slot machine (3 rolls, 9 symbols), and have to compute the expected winning. B starts as cooperative-leader ("I can" – "You Can"), then she becomes leader, suddenly she is not able to come up but she trusts her classmates, eventually she comes back to collaborate with her classmates on the task.

We firstly observe a group of teachers interpreting the same data presented in Andrà and colleagues (this volume) and asking them to fill in a 2x2 table like the one presented in Figure 1. We collected also teachers'

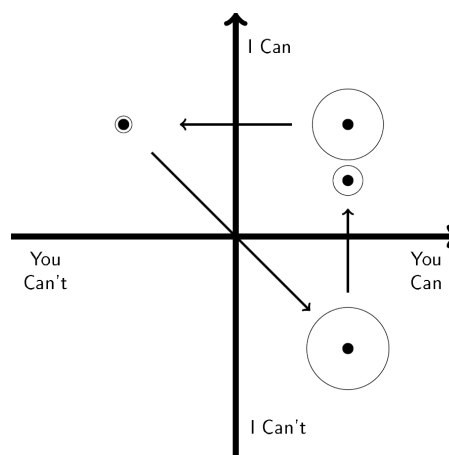


Figure 1: B's trajectory

extended comments. We seek for agreement/disagreement with respect to our interpretations, focusing only on one student per group as an initial step.

There is a certain degree of agreement among teachers, and between teachers' interpretations and ours. In the poster we show some data that allow us to claim that collecting the teachers' views according to the "I can" – "you can" frame goes beyond the purpose of validating a methodology: it is a way of observing, collecting and giving sense to affective moves that may drive the teachers' decisions and behaviour in classroom. There are emotional issues that emerge with respect to the teachers' perceived expectations in the "management" of group activities, as well as their specialised knowledge of group dynamics.

ACKNOWLEDGEMENT

Project funded by Politecnico di Milano through the 5x1000 Polisocial Award 2013 in collaboration with Fondazione Politecnico di Milano.

REFERENCES

- Andrà, C., Brunetto, D., Parolini, N., & Verani, M. (2015). 'I can – you can': cooperation in group activities. In Krainer, K. & N. Vondrová (Eds.), *Proceedings of CERME9* (this volume).
- Andrà, C., & Liljedahl, P. (2014). 'I sense' and 'I can': framing intuitions in social interactions. In Liljedahl, P. & Nicol, C. (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 2, pp. 49–56). Vancouver, Canada: PME.
- Radford, L. (2014). On teachers and students: An ethical cultural-historical perspective. In P. Liljedahl & C. Nicol (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 1, pp. 1–20). Vancouver, Canada: PME.
- Sherin, M.G., Jacobs, V. R., & Philipp, R. A. (2011). *Mathematics Teacher Noticing: Seeing Through Teachers' Eyes*. New York, NY: Routledge.