SFIDA
and other experiences of collaborations between French and Italian researchers.

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Séminaire Franco Italien
de Didactique de l'Algèbre

Founded in 1993 by

Ferdinando Arzarello,

Giampaolo Chiappini,

And Jean-Philippe Drouhard.

Held until 2012

A whole day twice a year: in Nice and Genoa or Torino.

6 presentations programmed around a main theme.

Allotted time was sufficient to develop deep discussions, in French and Italian (*English if needed*).

a French-Italian vocabulary helped understanding l terms when too different in the two languages (élève- alunni).

The stable group of participants (including the promoters and Assude, Bagni , Bazzini, Boero, Douek, Malara, Maurel, Sackur) did not form a research team, but collaborations flourished now and then.

Researchers were invited (depending on the theme of the meeting); among them: Raymond Duval, Gila Hanna, Luis Radford, Pessia Tsamir, Gérard Vergnaud …)

Abstracts were shared before the meeting.

Work documents are assembled in volumes (3 till now).

https://sites.google.com/site/actessfida/home/le-seminaire-sfida

Openness was the main characteristic, concerning

- The themes
- The debate
- The variety of theoretical frameworks:

  Conceptual fields, experience field didactics, local knowledge and triple approach, embodiment, epistemography, semiotic registers, semiotics, theory of didactic situations, anthropological theory of didactics, rational behavior…
- And connected areas: epistemology and history of mathematics, philosophy, cognitive sciences
- The variety of methodologies

Openness and variety stimulated creativity,

And it prepared some of the participants to assume responsibilities within PME, ICMI, ERME…

In particular, this way of collaboration inspired the organization of CERME's working groups (when J. Philippe Drouhard and then Paolo Boero were ERME presidents)

Presented works could concern:

Theoretical aspects,

Open didactical questions,

Projects,

Work in progress,

First accounts of experiments,

Students productions (to be analyzed).

Debates were not bounded to remain in one particular framework, nor at a particular theoretical level.

… And this favored advancements.

More than 20 PME research reports were inspired (or supported) by the work done in SFIDA.

Examples of scientific impact :

Relationships and differences between equations and inequalities,

Ways (algebraic and analytical) of dealing with inequalities;

Numerical environments for teaching and learning algebra (aplusix, AlNuSet);

Early approach to algebra;

Epistemological studies on the nature of algebra;

Proof in algebra;

Social interactions in learning and teaching algebra

Modeling, relation with functions, variables and parameters; Algebraic generalization;

Cognitive and body components,

different cultural historical practices analyzed as reflecting algebraic thinking, as potential rooting for teaching;

Semiotic mediation theory;

Language, and various semiotic representations, Pierceian perspective, Wittgensteinian perspective;

Mental dynamics, visualization, relationships with geometrical representations;

Critical questioning of perspectives on algebra;

Relations to institutional demands;

Didactical settings for the teaching of algebra.

A personal testimony

Thesis supervised by Vergnaud and Boero

Integrating references from

- the French didactics (works of Vergnaud, influences from R. Douady, R. Duval…),
- Italian didactics (experience fields),
- Vygotsky, a crucial reference for several Italian colleagues at that time.

Vaguely impregnated by relativistic French philosophers like Deuleuze

Class experiments

Exploring and co-developing experimental situations in Italian classes within long term projects.

The support of the teachers -involved as researchers in Italian research teams- was crucial in my scientific development.

The Italian team strongly influenced by Italian philosopher Gramsci.

Methodology

I followed the Italian trend of “research for innovation”:

- Research problems are scrutinized under the lens of teaching and learning difficulties in classes,
- The theoretical frame is a tool to understand, predict, design didactical settings etc..
- But it is questioned through long term and repeated experimentations,
- Theoretical components are developed on the basis of the analysis of experienced situations.

Scientific development

Working with Vergnaud allowed me to explore the limits of various theoretical frames, and to elaborate fruitful ideas even when not mature.

Working with Boero implied to mature them into more organized ones, and to develop consciousness of their theoretical limits or validity.

Experimental class work favored creativity, attention to pupils' activity, opened ambition…

And understanding the importance and fruitfulness of slowing the pace of class activity and deepening it.

Experience with Boero's research group

Research for innovation implied a specific human organization and composition of the team.

-> Engestrom's expansive learning: teachers' learning and professional development as research team members relied on collaborative relations, tending to be horizontal.

All are productive (transcription of class discussions, analysis of students' productions, critical analysis of didactical settings, cooperation to transform them or produce new ones).

Various questions discussed from most practical to most theoretical, through relational ones.

Given the nature of experience fields didactics, and of the composition of the team, work included interdisciplinary organization of class activity and content.

The Italian national research seminar

I attended five recent editions of the Seminar (running once a year since the second half of the eighties),

I was co-presenter in one of them.

The seminar lasts 4 half days.

A researcher, or a small team, presents a large part of their work, forming a coherent line or a theme.

Their content are shared long before the meeting.

Reactions by other researchers in mathematics education and also in other fields (philosophers, historians…) being programed upstream.

My impression

Time for discussion and maturation of ideas, openness to variety of perspectives and of levels of analysis are the salient characteristics I enjoyed.

A question about research for innovation.

Is this methodology, reflecting a leading motive of the Italian research, still as strongly and productively operating?

Two factors may weaken this trend:

- favoring theoretical development “per se” (less constrated by long term class experiments)
- needing to systematize class activities and designs

And this would weaken the collaboration with teachers-researchers.

Is there a change in equilibrium between research cultural trends and impact of personalities? …

THANK YOU