

## **IMPROVING TEACHERS' CRITICAL THINKING IN A "ON LINE" GEOMETRY COURSE**

Joaquim Giménez Rodríguez<sup>1</sup>  
Universitat de Barcelona. Spain

Marcelo Almeida Bairral<sup>2</sup>  
U. Federal Rural do Rio de Janeiro. Brasil

### **Introduction**

The ability of teachers to develop better professional understanding is an evolving process presenting multiple faces and it's usually an "incomplete activity" (Ponte 1994). Professional development in a teacher practice is necessary for increasing metacognitive understanding about mathematical processes but other components will appear. Thus, in a research process, we want to analyze critical aspects (Smith 1991) of the situated (distributed) professional knowledge (Llinares 1998), and evolution of a critical thinking process (Kuhn 1999).

### **Developmental design.**

Our developmental "on line" research framework and activity (Bairral, Giménez e Togashi 2000) is a part of a greater project for improving teacher training in geometry (for 11-14 years old students) developed since 2000 as a cooperation project by the Federal Rural University of Rio de Janeiro (Brasil) and Barcelona University (Spain). A group of teachers followed a distance-telematic learning course of about 50 hours in six months by using a diversity of teleinteractive tools : email, discussion list and collaborative chats.

A case study is conducted with two of the teachers in order to (1) characterize some specific issues in this "on line" activity and (2) proposing a model for the critical component of a professional knowledge by means of an internet training experience.

### **Rationale and results**

The initial, intermediate and final slots of the course were considered as data. We observed all registered teachers' communications in the course tasks, collaborative lists, narratives and self-regulation enquiries at the end of each lesson. Two semi-structured interviews and text writings were also used and videotaped experiences of their classroom activity has been analyzed in order to recognize their changes-in-action.

The study reveals the importance of meta-strategic, metacognitive components (Kuhn 1999). In fact, semantic text analysis shows (i) affective influences as an important issue for development of professional critical thinking and (ii) specificity on the epistemological geometrical perspective. Eventhough just descriptive level was a starting point for many teachers, some of them could exhibit through the course, pseudoepistemological view when confronting geometrical situations in the on line environment.

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