FORMAL PROOF LEARNING AND IDENTITY CONSTRUCTION IN THE ENTRANCE TO A COMMUNITY OF PRACTICE

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This paper reports on an ongoing research project carried out with first year Computer Science major from the National University of Córdoba (Argentina). In this *setting* (Lave, 1988) where the mathematics plays a fundamental role, the desertion level is high and there is an important percentage of students who can't past the exams. The situated learning theory (Lave & Wenger, 1991; Wenger, 1998) allows posing this problem as the entrance to a community of practice involving the learning of the practices considered important for such community and the identity construction. The research data were collected through six months of ethnographic field work. During the field work, a close contact was established with six first year students and two teachers of a specific course called "Introduction to Algorithm". We followed their everyday experiences and registered their difficulties. In this communication we show some results based on a preliminary analysis.

One of the most important practices negotiated between students and teachers during the above mentioned course was formal demonstration in logical systems. A significant amount of time was spent learning mathematical notions and tools like propositional calculus, the use of quantifiers and inductive proofs. Learning to prove can be understood as learning to write texts in the language of formal proofs. The community establishes a set of rules for the acceptance of these texts. Such rules are based on conceptions about the formal, syntactical and mechanical nature of the mathematical activity and logics as understood inside this community. The abilities to interpret and to construct demonstrations also involve the knowing of these conceptions that frequently remain implicit during the lessons. Simultaneously, the exams are transformed in fundamental indicators in the process of identity construction since they represent instances that place the students in relation to the community. The students' performance in the exams give rise to the image of the «genius», or the «geek» that allows some students to define themselves in opposition, considering themselves as «normal students». Others held themselves responsible for their bad performance associating their unsuccessful performance with a lack of «abilities». These students construct marginal identities within the community.

References

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