INTERDISCIPLINARY LESSON STUDY ABOUT AN INQUIRY OF BIODIVERSITY THROUGH ANIMAL FOOTPRINTS

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Initial Teacher Education (ITE) should provide opportunities of research about teaching practice. Lesson Study (LS), being a highly specified form of classroom action research, can provide a context to promote meaningful learning and knowledge development (Leavy & Hourigan, 2016). This research aims to explore the development of mathematics and science pedagogical content knowledge (PCK) of preservice teachers through a LS. The LS is focused on an interdisciplinary inquiry into biodiversity through the study of animal footprints. It was done in the ITE - Master degree - involving three courses: Didactics of Physics and Natural Science, Didactics of Mathematics and Supervised Teaching Practice. The LS participants were five preservice teachers, three professors of the higher education (HE) institution, one of mathematics education and two of science education, and four middle schools' senior teachers of mathematics and science, responsible for the internship at their schools. This research followed the Dudley's (2014) LS model and occurred in two cycles: research lesson 1 (RL1) and 2 (RL2). Data was collected through notes and audio recording of the RL planning, photos and audio recordings of the discussion sessions about the RL and notes from each classroom observation focusing on the pupils' learning and progress. The three HE professors organized an initial discussion session about curriculum and didactics, followed by a focus in concrete contents of math and sciences, with an interdisciplinarity approach, and elaborated a first guide for an inquiry into biodiversity trough animal footprints. The inquiry's aim was to determinate the area with more biodiversity through footprints collected in three different locations (areas A, B and C). Afterwards, they implemented the tasks with the preservice teachers. Then, the preservice teachers planned the RL1 of sciences and mathematics to implement with grade five students (10-12 years old). The activity contemplated tasks with laboratory work to explore animal footprints and math tasks to solve in classroom using elements collected about footprints. The RL were taught by one preservice teacher and observed by the HE professors, a senior teacher and the others preservice teachers. In a discussion session, the LS participants discuss their observations and reflections and identify some aspects for the RL improvement, concerning goals, tasks, resources, flow of the lesson and classroom's disposition. In the second LS cycle, the RL2 was refined and implemented with another 10-12y student class. Then, it took place another discussion and a final refinement of the plan and resources of the RL. Concerning preservice teachers, the analysis of the recorded panel discussions showed that the LS promoted an effective development in their PCK. The preservice teachers: i) redesigned the RL and improved the tasks instructions with focus in the learning goals, ii) gained more conscious about the students' thinking and how they apply their prior knowledge to understand the content of the lesson; iii) reflected about which questions engage students and facilitate their thinking; iv) gave more attention to the variety of strategies that helped or hinder students' learning.

Keywords: lesson study, mathematics education, pedagogical content knowledge, science education