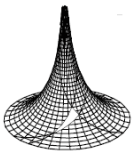

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A Nim-like game and a machine that plays it: a learning situation at the interface of mathematics and computer science

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Abstract. The purpose of this work is to take a didactic look at a learning situation located at the interface between mathematics and computer science. This situation offers a first approach to the concept of artificial intelligence through the study of a reinforcement learning device. The learning situation, inspired by the Computer Science Unplugged approach, is based on a combinatorial game, along with a device that learns how to play this game. We studied the learning potential when the human players face the machine. After an *a priori* analysis using the Theory of Didactic Situations (TDS), we conducted a pre-experiment in order to strengthen our hypotheses. In this article, we will focus on the analysis of the didactic variables, the values we have chosen for these variables and their effects on students' strategies.

Key words and phrases: Mathematics and Computing links, Learning Situation, Nim Game, Theory of Didactic Situations.

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