

Chapter 9

Description of Games

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ABSTRACT

The chapter defines the criteria on which the choices for the design and realisation of the simulation games were based as well as the educational goals. Two simulation games are presented, one for geometry the other for arithmetic; these are supplemented by the relevant documentation, a description of the materials and the observation and verification instruments.

INTRODUCTION

The term “simulation” is commonly understood to be associated with virtual reality, such as video animation and computer games. In this work, however, we use simulation to refer to the simulation games carried out in the classroom; these games make use of every day materials and have meaningful goals. This choice was made because it was felt such games could creatively involve learners with the target subjects (arithmetic and geometry) in a primary school context.

At the outset the members of the research team established the criteria for the project, some of which were later redefined after the experimental phase. Numerous

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discussions were carried out before a final decision was made to leave to one side the more widely cited criteria from the literature relating to the fields of economics, the handling of money or probability.

Indeed, from the analysis of these games, a picture emerged of generally complex situations requiring problem solving and decision-making skills, through which it became possible to amplify the selected phenomena or the underlying structures. In this way the pupils could acquire, stimulate and improve competences and skills transferable to real situations that it would be difficult to study at the same place and time without the utilisation of a simulation game.

Apart from focusing attention on the appropriate conditions in which learning can take place, our research efforts were engaged in the pragmatics of learning/teaching mathematics.

The research group chose, therefore, to design simulation games to further the construction of mathematical thought and to help learners develop a positive attitude towards mathematics (Domenici G. & Frabboni F, 2007). In other words the group decided to design games with the aim of:

- Launching the guided discovery of certain mathematical concepts and the gradual acquisition of mathematical language. The simulation games are specially designed for the purpose of achieving the aims laid down in the math syllabus in a sheltered environment; students are set mathematical problems, and through their resolution they begin to perceive the universality of mathematical concepts and develop the process of abstraction, defining symbols which can be used later to represent formalised concepts;
- Promote a positive image of mathematics as a worthwhile and important discipline, not just a set of rules to be learnt by heart and applied but rather to be “appreciated and used to set or tackle problems and explore and perceive the relations and structures in nature and human creations” (Domenici G & Frabboni F, 2007, p. 228-229).

When designing the games the research group was very careful to use the guidelines laid down in the literature studied at the beginning of the project and theories of educational psychology for the overall decisions on the rules and materials for each game.

Leaving aside for the moment the specific details of each game, which will be examined at a later stage, other decisions were taken relating to the type of game, its practicality and conduct.

In order to capture the interest of the children it was decided to start by clarifying the aims of the game to raise their curiosity and start them working on the problem

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