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ABSTRACTS

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ARTICULATIONS ENTRE LES TECHNIQUES TRAVAILLÉES DANS UN DISPOSITIF D'AIDE PRÉVENTIF EN MATHÉMATIQUES ET EN CLASSE : PROPOSITION D'UNE CLASSIFICATION

Proposal of a classification of the possible links between techniques used in a preventive aid session for students with difficulties and those used in a mathematics classroom. Our research team has been working on the development of aid sessions aimed at students with difficulties in mathematics, that take place prior to a classroom lesson and that aim at preparing these students to fully engage into classroom activity. One of the main issues during the development of each aid session is the necessity to prescisely articulate the content of the aid session with the classroom task. In order to clarify under which conditions the articulation of the aid session and the classroom task optimizes the functions of the aid session, we elaborated a classification of possible articulations. We conducted a new classroom experimentation and based our analysis of the articulations between aid sessions and classroom tasks on concepts from the anthropological theory of the didactic and the joint action theory in didactics.

EMILIE MARI

CONCEPTION D'UN OUTIL METHODOLOGIQUE POUR L'ANALYSE DES SEANCES DE MATHEMATIQUES INTEGRANT DES ROBOTS PROGRAMMABLES : UNE APPROCHE QUALITATIVE

Designing a Methodological Tool for Analyzing Math Sessions with Programmable Robots: A Qualitative Approach. In this article we present the analysis grid we designed to analyze classroom sessions integrating programmable floor robots, as part of a research project aimed at studying the potential of educational robotics in the development of spatial knowledge. We based our tool on three levels. The first is based on classroom observations of different aspects of the integration of programmable robots: the robot itself, spatial knowledge and the programming used to move the robot. The second level focuses on the spatial tasks at stake in the lessons, while the last level focuses on the conditions under which the robot is integrated into the classroom. We present the conception and theoretical grounds for this grid and implement it on a case study from our research.

PIERRE ESCLAFIT, SIMON MODESTE

ANALYSE ET ORGANISATION D'UNE SITUATION DIDACTIQUE « DÉBRANCHÉE » POUR DÉCOUVRIR L'IA, À L'INTERFACE ENTRE MATHÉMATIQUES ET INFORMATIQUE : LA MACHINE QUI APPREND À GAGNER À UN JEU DE NIM

Analysis and organization of an "unplugged" didactic situation to introduce AI, at the interface between mathematics and computer science: the machine that learns to win a game of Nim. This article offers a didactic analysis of an activity derived from scientific outreach, at the interface between mathematics and computer science. We analyse an activity

based on a particular combinatorial game and a machine which learns to win at this game, conceived within the framework of unplugged computer science. Using the theoretical framework of the theory of didactical situations and a didactic engineering methodology, we analyse learning potentials, and organize a didactic situation, experimented with 14-15 year-old pupils. A priori and a posteriori analyses enable us to show the potential for mathematical learning, AI-related learning, and the way in which these two learning stakes are articulated in the students' work. The results highlight the relevance of the theory of didactical situations for scientific outreach contexts, as well as for the didactics of computer science and the interactions between mathematics and computer science.

ZAHID EL M'HAMEDI

PRISE DE DÉCISION PROBABILISTE SPONTANÉE CHEZ LES APPRENANTS MAROCAINS

Spontaneous Probabilistic Decision Making in Moroccan Learners. In our modern society, individuals are often faced with situations in which they have to make decisions spontaneously in an environment involving chance, in which the use of probability remains an adequate tool occupying an important status. In this article, we present an empirical study exploring the manifestation of certain biases and heuristics among moroccan learners during such decision-making. We also propose comparisons between learners from different school cycles within the moroccan educational system. In order to carry out this project, we selected a sample of 410 individuals, to whom we administered a questionnaire composed of six questions, involving four heuristics and one bias. The results we obtained showed that "classical" teaching does not develop, in the learners, the erroneous spontaneous intuitions that often remain next to the taught models and retain their areas of action.

FREDERICK TEMPIER, MICHELLA KIWAN-ZACKA

REGULARITES ET VARIABILITES DES CARACTERISTIQUES DES EXERCICES DE MATHEMATIQUES PROPOSES DANS LES MANUELS DE FIN D'ECOLE PRIMAIRE

Regularities and variabilities of mathematics exercises in elementary school textbooks. In the learning of mathematics, solving exercises is an fundamental component for practice and deepening knowledge. This study examines the characteristics of exercises presented in ten textbooks used in the final year of primary education in France (Grade 5) within a teaching sequence focused on the ordering of decimal numbers. Drawing on activity theory in mathematics didactics, we developed a systematic analytical framework. Our analysis reveals significant variability among the exercises proposed in the ten textbooks on this content. However, we also identified certain general trends: exercises mainly aimed at the direct application of knowledge with little contextualization, few changes in register, and mainly offered during the lesson and before assessment. These results highlight a predominant focus in textbook exercises toward practicing procedural skills rather than fostering deeper conceptual understanding.

CLAIRE GUILLE-BIEL WINDER, ÉDITH PETITFOUR

IMPACT DE L'USAGE D'UN MANUEL SUR L'ENSEIGNEMENT DE LA RELATION DE PARALLÉLISME A L'ÉCOLE PRIMAIRE

Impact of textbook use on the teaching of the concept of parallelism in primary school. In previous research, we developed a framework for a didactic analysis of mathematics textbooks in the field of geometry at primary school. As a continuation of this work, the present study investigates the possibility of establishing a link between an analysis of a textbook's "intrinsic quality" and the effects observed on its use by a teacher when conducting learning activities

focused on the concept of parallelism in Year 4 (students aged 9–10). We reveal the numerous adaptations of the textbook's suggestions made by the teacher of the class studied. Our analyses also show that the expertise of a teacher using a textbook of "low didactic quality" may not be sufficient to detect and compensate for the failings of this textbook.