

ABSTRACTS

VALERIE BATTEAU, TAKESHI MIYAKAWA . DES SPÉCIFICITÉS DE L'ENSEIGNEMENT DES MATHÉMATIQUES À L'ÉCOLE PRIMAIRE AU JAPON : UNE ÉTUDE DES PRATIQUES D'UN ENSEIGNANT.

Abstract. The specificities of mathematics teaching in Japanese primary school: a study of the teacher's practices. Mathematics teaching in Japanese primary school presents some specificities: the structured problem solving lessons, the importance of mathematical thinking, and the lesson study tradition. This paper aims to understand ordinary practices of a Japanese teacher, especially how these cultural specificities translate into his practices. We analyze teacher practices during a sequence of lessons on the length of the 3rd year of primary school (students of 8-9 years) from the perspective of double didactic and ergonomic approach.

MASSELIN BLANDINE . DYNAMIQUE DU TRAVAIL MATHÉMATIQUE EN CLASSE ENTRE UN ENSEIGNANT ET DES GROUPES D'ÉLÈVES SUR LA SIMULATION EN PROBABILITÉS : UNE ÉTUDE DE CAS

Abstract. Dynamics of mathematical work in class between a teacher and groups of students on simulations in probability: a case study. The purpose of this contribution is to characterize the work of a teacher on simulations in probability in grade 9 course in France (14-15 year-old students). In a case study, we report in particular on what is at stake in the solving of a probability task with simulations when the teacher decides to organize small group work. Methodological tools, such as the chronogram, related to the specificity of this type of work in class are defined in the article. We have used the theory of Mathematical Work Spaces (MWS) and concepts such as potential suitable MWS and actual suitable MWS have been defined to conduct our study. The analysis of the teacher's interventions in the classroom revealed a standardization of the probabilistic model produced by the teacher during the simulation. The role of the teacher and the choice of the digital artefact transformed the students' work. We matched blockages, rebounds or identified containments in the actual MWS with the potential MWS. Our research has clarified first cognitive task routes in probability on The Hare and the Tortoise game.

VALÉRIE VINÉ VALLIN. MÉDIATION SUR LA NOTION D'ÂGE DESTINÉE À DES ÉLÈVES DÉFICIENTS INTELLECTUELS

Abstract. Temporal construction in students with an intellectual deficiency versus "ordinary" children. Which teacher did not have in his/her class a student who is anxious, because he does not master the notion of time? This is even more true for young children or children with cognitive disabilities. However, there is very little research in the field of mathematics or cognitive science for this population. However, at the time of inclusive school, this would have all its relevance. So how to propose a mediation that meets their needs? This study proposes a diagnostic evaluation in this area as well as a mediation meeting the needs of

students enrolled in ULIS (local inclusive education unit). Thirty-six students with intellectual disabilities (ID) and two hundred "ordinary" students participated in this study. We observed that the notion of age is built more slowly in these ID subjects, with a gap of, around, 3 to 5 years with the ordinary students. This gap has diminished with an appropriate mediation.

VIRGINIE HOULE, FABIENNE VENANT, RAQUEL ISABEL BARRERA-CURIN . ÉVOLUTION ET INTERINFLUENCE DES MODES D'AGIR, PARLER ET PENSER LES FRACTIONS DANS DEUX PROBLEMES MULTIPLICATIFS

Abstract. Based on studies focusing on the roles of language in the teaching and the learning of mathematics, three dimensions are distinguished - acting, talking and thinking - interrelated. In order to explore the interactions and progressive transformations of these dimensions during the teaching and the learning of fractions, a teaching sequence was experimented in a specialized class. The sequence is composed of a network of problem focusing on multiplicative relationships inherent in the concept of fraction. In this article, we present the a priori and a posteriori analyses of two of these problems. These analyses are carried out in a didactic framework enriched with a specific perspective on the modes of acting, speaking and thinking the multiplicative relationships in question.

NATACHA DUROISIN, ROMAIN BEAUSSET, JESSICA LUCCHESI . FAVORISER LE PASSAGE À LA VISUALISATION NON ICONIQUE PAR LE RECOURS À UNE INGÉNIERIE DIDACTIQUE POUR FACILITER LA TRANSITION PRIMAIRE/SECONDAIRE EN GEOMETRIE

Abstract. Promoting the passage to non-iconic visualization by using didactic engineering to improve transition primary/secondary education in geometry. There is a rupture of didactic contract about the visualization learning during the transition from primary to secondary (Perrin-Glorian & Godin, 2018). If iconic visualization is exercised in primary education, the acquisition of non-iconic visualization – which is fundamental – is left to the learners at the beginning of secondary school. This article describes the results of a Belgian study, based on quasi-experimentation plan in Belgium, which is part of the didactics of mathematics and cognitive sciences. The aim of the authors is to evaluate the implementation of a didactic engineering based on dimensional deconstruction allowing the progressive development of non-iconic type visualization in learners at the end of primary education. The results are used to guide the work of mathematics teachers.

GLORIANA GONZÁLEZ . VISUAL ARTS IN U.S. GEOMETRY TEXTBOOKS ALIGNED WITH THE COMMON CORE STANDARDS

Abstract. This study investigates visual arts references in five U.S. high school geometry textbooks aligned with the Common Core State Standards for Mathematics. In all of the textbooks, architecture is the most commonly used context. More than half of the visual arts references are in the exercises. Congruence is the domain most often used, followed by Similarity, Right Triangles & Trigonometry. The visual arts references support the four traditional arguments justifying the geometry course but mostly support the goal of teaching geometry in ways that allow students to draw upon their intuition.

NATHALIE ANWANDTER CUELLAR, STEVE TREMBLAY. SAVOIRS VÉHICULÉS PAR LES MANUELS SCOLAIRES FRANÇAIS ET QUÉBÉCOIS À PROPOS DE L'AIRES. UNE ÉTUDE COMPARATIVE

Abstract. This article presents a comparative study of French and Quebec textbooks on the notion of area. Several research studies have raised students' difficulties in understanding the concept of area, and recent work suggests studying these difficulties in connection with the learning opportunities offered by textbooks, which are a tool widely used by teachers. In order to highlight the similarities and differences in the knowledge set out in the textbooks of two territories and to interpret them according to the learning of the pupils, we have built a praxeological reference model using the Anthropological Theory of Didactics (TAD). Our results show similar limitations in French and Quebec textbooks, in particular the strong focus on the numerical dimension of the area to the detriment of the elements contributing to a conceptualization of this notion.

DANIELLY KASPARY, HAMID CHAACHOUA, ANNIE BESSOT . QU'APPORTE LA NOTION DE PORTÉE D'UNE TECHNIQUE À L'ÉTUDE DE LA DYNAMIQUE PRAXÉOLOGIQUE ?

Abstract. What does the notion of technique reach bring to the study of praxeological dynamics? We look at educational institutions as dynamic systems where praxeologies exist only as a result of a praxeological dynamic. In this article, we study some aspects of praxeological dynamics using, in particular, the notion of technique reach (theoretical, pragmatic and institutional) and competition between techniques. Two case studies illustrate praxeological dynamics concerning the study of the resolution of second-degree equations in the French educational system. One of the contributions of this article is to provide tools for curriculum analysis and textbooks.

ALAIN KUZNIAK, JEAN-CLAUDE RAUSCHER. IMPLICATION DANS UN ENSEIGNEMENT RENOUVELÉ ET RECHERCHES EN DIDACTIQUE DES MATHÉMATIQUES HOMMAGE À FRANÇOIS PLUVINAGE ET À LA PENSÉE VAGABONDE ET ACTIVE D'UN CHERCHEUR ET HOMME RARE

Abstract. Involvement in a renewed teaching and research in the mathematics didactics. Tribute to François Pluinage and the active and vagabond thinking of a researcher and a rare man. François Pluinage did not associate his name with a didactic theory, but more profoundly he animated with his powerful and friendly breath a school of thought, a way of doing and acting always open to the world and the future. Through this article, which is very incomplete, we would like to specify his originality as a researcher particularly involved in the community. Throughout this evocation of his scientific career in phase with the evolution of educational practices, the reader will be invited to rediscover some of the traits of his rich and endearing personality.