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Une approche par la recherche en didactique

IREM de STRASBOURG

ABSTRACTS

FRÉDÉRICK TEMPIER, CAROLINE LAJOIE, VALENTINA CELI. LES PRATIQUES DE FORMATION À L'ENSEIGNEMENT DES MATHÉMATIQUES : UNE APPROCHE PAR LA RECHERCHE EN DIDACTIQUE

Abstract. Training practices in mathematics teaching: a mathematics education research approach. While research in mathematics education has invested many questions related to teacher training, the role of the teacher trainer remains little developed. It is a matter of questioning the trainer's practices, the possible effects on the professional development of the trainees, the knowledge or conceptions that he/she mobilizes, the constraints he/she is confronted with, his/her interactions with other actors, etc. This thematic issue brings together original studies using a variety of approaches that reflect emerging issues and mobilize various theoretical and methodological tools, with the aim of contributing to the development of this field of research.

PATRICIA MARCHAND, VINCENT MARTIN, MATHIEU THIBAULT, CAROLINE BISSON. POSTURES ET GESTES DE PERSONNES FORMATRICES EXPLOITANT LES JEUX DE RÔLES COMME DISPOSITIF DE FORMATION À L'ENSEIGNEMENT DES MATHÉMATIQUES : ANALYSE DE RÉCITS DE PRATIQUES

Abstract. Postures and gestures of mathematics educators using roleplaying as an education design: analysis of practice narratives. For several years, roleplaying has been used as a device with preservice teachers in mathematics education. Although the potential of roleplaying in teacher education has been studied, the role of the mathematics educator in roleplaying remains poorly

documented. In this paper, through teacher education practice narratives written by the authors of this text and with a framework, we describe the professional postures and gestures adopted by the mathematics educators in the different phases of the roleplaying design. Despite some differences in operating the device, important similarities emerge in the postures and gestures adopted by the mathematics educators through the four phases of roleplaying.

CLAIRE GUILLE-BIEL WINDER, CAROLINE LAJOIE, CHRISTINE MANGIANTE-ORSOLA, PASCALE MASSELOT, FREDERICK TEMPIER. PRIORITÉS ET STRATÉGIES D'UN FORMATEUR LORS DE LA MISE EN ŒUVRE D'UN JEU DE RÔLES EN MATHEMATIQUES

Abstract. A teacher trainer priorities and strategies while implementing a role-play in mathematics. In previous work, we designed, implemented and analyzed a teacher-training scenario based on role-play, which immerses preservice teachers into a situation involving a primary school teacher helping a pupil with some mathematical task (Lajoie et al., 2019). We highlighted some potential offered to the teacher trainer to bring out, in preservice teachers, mathematical, didactic and pedagogical knowledge but we came to the conclusion that making the most of this potential involved demanding work on the part of the teacher trainer. In this paper, we investigate this dimension within the activity theory field, more precisely the way a teacher trainer who did not participate in the design of the scenario implements it, in particular the way she manages the collective discussion phases.

CLARA AUCLAIR . UNE ANALYSE DES PRATIQUES DE FORMATION INITIALE L'ALGORITHMIQUE ET À LA PROGRAMMATION À DESTINATION DES ENSEIGNANTS DU PREMIER DEGRÉ

Abstract. An analysis of initial training practices in algorithms and programming for primary school teachers.
The didactic works whose object of study concerns training practices have relied on the tools developed for the analysis of teaching practices by specifying them in the context of the training (Houdement & Kuzniak, 1996; Emprin, 2007; Sayac, 2012). In this work, we reuse and cross-reference these methodological tools in order to understand the practices of training in algorithms and programming for trainee school teachers. This case study allows us to better

understand the challenges of this second year of initial training by highlighting the training knowledge, the strategies used as well as the epistemological postures called upon.

CAROLINE LAJOIE, NADINE BEDNARZ, MIREILLE SABOYA, VANESSA HANIN, LILY BACON. LOGIQUES D'ACTION DE CONSEILLERS PEDAGOGIQUES EN MATHÉMATIQUES AU PRIMAIRE DANS L'ACCOMPAGNEMENT D'ENSEIGNANTS À LA RÉSOLUTION DE PROBLEMES EN CONTEXTE D'ENSEIGNEMENT

Abstract. Logic of action of pedagogical consultants in supporting elementary school teachers with mathematical problem solving in a teaching context. Despite the importance, in Québec, of pedagogical consultants (PCs) for continuing education, little research has focused on understanding the PC profession, from within its practice. This is particularly the case in mathematics education where PCs are facing major challenges in relation to problem solving. Through collaborative research carried out with PCs intervening in elementary schools, we aimed at a better understanding of the support offered to teachers. Three contrasting cases presenting different accompaniments are here developed. Based on the framework of "professional didactics" and on the concept of "logic of action", an emerging analysis puts in light the professional activity these CPs enact and the underlying reasons guiding their activity.

LILY BACON, MIREILLE SABOYA. LA SUPERVISION DES STAGES EN ENSEIGNEMENT DES MATHÉMATIQUES AU PRIMAIRE ET AU SECONDAIRE : ANALYSE DES OBJETS ET DES DYNAMIQUES D'INTERACTION ENTRE LES ACTEURS DE LA FORMATION

Abstract. Supervision of practicum in teaching of mathematics in elementary and secondary levels: analysis of the objects and dynamics of interaction between the training actors. In Quebec, practicum in teacher training alternates between moments of action in the classroom and analysis of these experiences by the trainee, the associate teacher and the university supervisor. Our involvement in the practicum as supervisors prompted us to become interested in what is addressed and discussed about mathematics teaching in the post-lesson interviews by the different actors in the training. From the analysis of two cases, there emerge convergent,

complementary or divergent perspectives of the situations discussed and of what underlies a mathematics teaching activity recognised as relevant by the actors.

BLANDINE MASSELIN, FRÉDÉRIC HARTMANN, MICHÈLE ARTIGUE. ÉTUDE DU RÔLE DES FACILITATEURS DANS UN DISPOSITIF DE LESSON STUDY ADAPTÉ

Abstract. **Study of the role of facilitators in an adapted lesson study device**. The purpose of this article is to study the role of facilitators in professional development activities adapted from Lesson Studies, known as LSa. This requires a systemic approach, which takes into account the multiple actors of this device who work in various groups and institutions. After briefly describing the LSa device and specifying the theoretical framework and methodology of this research, we highlight the diversity of the roles assumed by the facilitators and the associated border crossings, focusing in particular on the circulation of three identified boundary objects (the avatar, the video library and the roadmap) during the development and successive implementations of the device.

MAHA ABBOUD, ALINE ROBERT, JANINE ROGALSKI. INTERROGER LES PRATIQUES DE FORMATION DES PROFESSEURS DE MATHÉMATIQUES : ORIENTATIONS DE RECHERCHE ET PERSPECTIVES (UN AGENDA)

Abstract. Questioning mathematics teacher training practices: research approaches and perspectives (an agenda). In this text, we propose to question the mathematics teacher training practices and to draw up some orientations and perspectives for their study. We first present a very general overview of these training practices and of their diversity. Beyond these differences, and drawing on existing theoretical elements, we secondly present an approach for conducting research on the implementation of certain training programs. This could serve as means both for analyzing and developing practices during training sessions, as illustrated by two examples sketched on collective training of secondary mathematics teachers. Perspectives end this text, which, let us stress, is not based on actual data analyzes but on a hypothesis on the development of practices. We see it as an agenda for the researcher and the trainer in this emerging field of didactical research.

CHRISTINE CHOQUET. COMPRENDRE LES EFFETS DES CHOIX DE FORMATEURS SUR LES PRATIQUES DE PROFESSEURS DE MATHÉMATIQUES DÉBUTANTS

Abstract. Understanding of the effects of trainers' choices on the practices of beginner mathematics teachers. This paper presents a research carried out by a researcher and teachers' trainers involved in initial training of mathematics teachers. The aim of this research is the study of the effects of choices made during training on beginner teachers' practices. The analyzes are realized within the theoritical framework the dual didactic and ergonomic approach (Robert, 2008). The results of these analyszes specify in terms of components of practices the significant influence of the practices of trainers on the development of the pratices of beginner mathematics teachers.

ISABELLE DEMONTY. APPROCHE PAR PROBLÈME ET FORMATION D'ENSEIGNANTS DE MATHÉMATIQUES : COMMENT SE DIFFUSENT, EN FORMATION, LES RÉSULTATS DE LA RECHERCHE ?

Abstract. Problem-based approach and teachers profesional development: how the research results are disseminated in training? Based on the framework of meta-didactic transposition analysis (Arzarello et al., 2014) and specifically the concepts of brokering and boundary object, this paper studies how knowledge to teach algebra is exchanged during a training program involving nine mathematics teachers and two researchers specialised in algebra teaching and learning. Organized in three half-day sessions, this program is based on a problem pointed out in the research literature as particularly rich to develop algebraic thinking. In addition, the materials used in training are come directly from the classes of the teachers participating in the program. In this sense, the program values knowledge that makes sense in both research and teaching practice. The analysis of interactions between researchers and teachers highlights three types of collaborative activities between the two groups and thus questions the potential of such a mechanism to foster integration of research results by teachers.

CECILE ALLARD, MAIRA MAMEDE. ÉTUDE DES CONDITIONS NÉCESSAIRES POUR FAVORISER L'EXERCICE DE LA VIGILANCE DIDACTIQUE DES FORMATEURS EN FORMATION INITIALE CIBLÉE SUR LES LIENS ENTRE APPORTS THÉORIQUES ET PRATIQUES EN CLASSE

Abstract. Study of the conditions necessary to promote the awakening of didactic vigilance for primary school teachers undergoing initial training. This article is based on the definition of teachers' didactic vigilance in order to consider the conditions of the trainer's vigilance in the initial training of primary school teachers assigned to kindergarten. We associate the exercise of a certain vigilance of the trainer with the improvement of the link between theory and practice in the trainees. The exercise of VDT requires particular conditions to grasp the needs of the trainees to this end, we have developed a training scenario that we describe. We analyse the data produced by its implementation.

LUCIE DEBLOIS, ALINE ROBERT. AVANCÉES ET NOUVELLES QUESTIONS SUR LES PRATIQUES DE FORMATION EN ENSEIGNEMENT DES MATHÉMATIQUES

Abstract. Advances and new questions on training practices in mathematics education.
This article presents a synthesis of the precedent articles to think about new perspectives in a large map of research in didactics of mathematics. The ten articles in this special issue conduct to observe, at first, that the context of professional formation in mathematics teaching, is crucial. In addition, a lot of questions about teacher, formations and their specificities emerge. In these conditions, didactics of mathematics could be mobilized in many and non-exclusive ways.