

## BOOK PROPOSAL FORM

DATE FORM COMPLETED:

### 1. EDITORS OF WORK:

a. *Names in full*

- i) Ghislaine Gueudet
- ii) Birgit Pepin
- iii) Luc Trouche

b. *Academic/professional affiliations*

- i) IUFM Bretagne – UBO (University of Western Brittany)
- ii) HiST- Høgskolen i Sør-Trøndelag (Sør-Trøndelag University College), Trondheim, Norway
- iii) National Institute for Pedagogical Research, France

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**2. PROPOSED TITLE:** (Please note: the title should be a clear reflection of the research/work done).

**Mathematics curriculum material and teacher documentation: from textbooks to shared living resources**

**3. SUBTITLE OF WORK** (if any):

**4. SERIES TITLE** (if known/if you prefer a particular series):

**5. EXPECTED MANUSCRIPT COMPLETION DATE:**

**October 2010**

**6. TYPE OF WORK:**

- (a) monograph
- (b) edited volume:

- 1. new material
- 2. previously published papers, from:
  - (c) conference proceedings:
    - 1. invited papers only
    - 2. all papers
  - (d) reference work (handbook)
  - (e) translation
  - (f) other, namely:

**7. ESTIMATED NO. OF:**

- (a) words in manuscript: 130 000
- (b) manuscript pages: 260
- (c) line drawings:
- (d) photographs:
  - black/white:
  - colour:
- (e) tables: 30
- (f) other items:

**8. MANUSCRIPT WILL CONTAIN:**

- (a) Preface: Rudolf Straesser
- (b) Bibliography of selected titles:
- (c) Name and/or subject index:
- (d) Translator's note:
- (e) Introduction, by the editors
- (f) Glossary of terms:
- (g) Other items: Conclusion, by the editors

**9. Description and purpose of work** (minimum of 200 words):

Curriculum materials and the interaction with these materials and resources is central in teacher education and professional development. How teachers use and learn from materials fundamentally depends on the interactions between the three components (generally involved in learners' interactions with text): the reader, the material and the context (adapted from Rumelhart, 1994). Teachers' use and learning from text-based materials depends to a large extent on the characteristics of the materials, on the teaching activity in which the teacher is engaged, teachers' beliefs and knowledge, and how these are aligned with the curriculum (Davis & Krajcik, 2005; Remillard, 1999). What kinds of curriculum materials do teachers select and use, and how? How do teachers learn from these materials, and in which ways do they 'tailor' them for their use and pupil learning? These factors interact in complex ways, as teachers select, interpret and shape the materials, individually and collaboratively with groups of colleagues. The characteristics of the resources shape the teacher's activity; analysing these characteristics enlightens the mathematics presented to the students, and more generally the classroom practice and the development of teacher professional knowledge.

Teachers collect resources, select, transform, share, implement, revise them- we call this process *documentation*. It happens in-class and out-of-class; it has individual aspects, but also involves a variety of collectives. This leads to a new perspective, considering teachers not as passive users, but as designers of their own resources. Their professional knowledge influences this design; at the same time, the design work generates new professional knowledge.

Traditionally, the textbook remains a central resource for the teaching of mathematics in most countries. Nevertheless, other kinds of resources, and in particular digital resources, accessible via Internet, are increasingly utilised. Teachers look for resources on selected websites; they communicate with each other, or with pupils, via e-mail; some teachers publish their own website, or are involved in online communities etc. Focusing on these resources helps to expose new phenomena: for example possibilities of distant work, new forms of collective work, amongst others. It also illuminates aspects of the teachers-resources interaction which go beyond the specificity of digital resources.

The purpose of this book is to provide a wider perspective on this issue in the field of mathematics education. It studies curriculum materials and their uses, in addition to investigations of teacher adaptation and use of those materials, and pays particular attention to digital resources. Teacher's professional activity is studied as a whole, at different moments and in different contexts, in-class and out-of-class, with a variety of agents. The collective dimensions of this activity

constitute a major focus of the work presented here.

**10. Please append an annotated table of contents of the work and a curriculum vitae** for each editor/author to this form. Additional information about the work such as relevant off-prints, a specimen chapter, etc. may be supplied separately.

**11. Primary audience for the work:**

Students and researchers interested in:

- mathematics education;
- educational research about curriculum material (textbooks in particular), about ICT;
- design and use of online resources, web-based material.

Teacher educators

Educational stakeholders, policy makers

**12. Competitive titles:** please list the books you know of with which your work will compete: (include author/editor, title, estimated length (pages), year published, publisher)

Baron, M., Guin, D., Trouche, L. (eds.) (2007). *Environnements informatisés et ressources numériques pour l'apprentissage : conception et usages, regards croisés*, Hermès, Paris, p.344.

Hoyle, C., Lagrange, J.-B. (2009). *Digital technologies and mathematics teaching and learning: Rethinking the terrain*, ICMI 17 study, Springer.

Remillard, J.T., Herbel-Eisenmann, B.A. & Lloyd G.M. (eds.) (2009). *Mathematics teachers at work- connecting curriculum materials and classroom instruction*, New York & London: Routledge.

Valverde, G.A., Bianchi, L.J., Wolfe, R.G., Schmidt, W.H. and Houn, R.T. (2002). *According to the Book- Using TIMSS to investigate the translation of policy into practice through the world of textbooks*. Dordrecht: Kluwer Academic Publishers.

Vandebrouck, F. (ed.) (2008). *La classe de mathématiques : activité des élèves et pratiques des enseignants*, Octarès, Toulouse 466 p.

**13. Is there additional use for your book as a course-book?**

Yes       No

If your book could be used in coursework, please list possible courses: (include course title/type, level, possible enrolments, main text, supplemental reading, possible contacts giving the course)

Master and doctoral degree in mathematics education or, more generally, educational research, possible courses about:

- Curriculum material, its impact on teacher development, the current evolutions of curriculum material and their consequences for teachers and students;
- ICT integration in class, impact on the students and teacher practices;
- Design and use of web-based teaching resources, quality of the resources;
- Collective dimensions in teacher practices and teacher development, evolutions brought by digital medium.

MA in Mathematics Education- HiST, Trondheim, Norway (module: 'Teachers working with curriculum materials')

PhD programme in mathematics education, University of Agder, Norway

MA in Mathematics Education, King's College London, UK

MA in Mathematics Education, University of East Anglia, UK

MA and PhD in Mathematics Education, University of Michigan, USA (module on 'the design, implementation and effects of curriculum')

MA and PhD in Mathematics Education (module: ICT), Université Paris 7 (France)

MA and PhD in Science Education (module: teaching resources for science teaching), Université de Lyon (France)

MA and PhD in Educational sciences (module: teaching resources), Université de Rennes (France)

In-service and pre-service mathematics teachers education about similar topics

NCETM courses in the UK (teacher professional development courses);

Professional development on the scale of and in US districts (see chapter by Paul Cobb & Jana Vinoska);

Professional development courses in Norway (organised by HiST)

Development projects (e.g. PRIMAS- 14 European countries, S-TEAM-15 European countries, EU projects)

Teacher professional development courses in France

All the authors involved in the book can be considered as contacts for such courses.

Additional contacts:

M. Maschietto Laboratory of Mathematical Machines, Modène University and Regio-Emilie, Italy

I.M. Gómez-Chacón Complutense University, Madrid, Spain

Tania Campos UNIBAN University, Sao Paulo, Brasil

#### **14. Through what**

(a) Society/association membership lists:

- at a national level, e.g.: BSRLM, MA and ATM in the UK; NOMAD in Norway, ARDM and CFEM in France

- at an international level, e.g.: ERME, ICMI, PME, CIEAEM, ZDM, EMS

(b) Electronic discussion lists: the associations' lists; Jerry Becker's list; math education Nottigham list.

(c) Thematic websites, e.g. EducMath (<http://educmath.inrp.fr>) in France

#### **15. What contacts/organisations might be interested in ordering multiple copies of your work?**

HiST and NTNU, Trondheim, Norway

NCETM and King's College London, UK

University of Michigan, USA

INRP (Lyon), Universities of Lyon, Paris, Rennes, Brest, France

#### **16. Can you suggest four or more experts (include research departments, schools, location, email address) whom you think would be capable of evaluating the topics covered in your book?**

Michèle Artigue, Pr. Dr. DIDIREM, Université Paris 7, France, President of ICMI [artique@math.jussieu.fr](mailto:artique@math.jussieu.fr)

Konrad Krainer, Pr. Dr. Universität Klagenfurt, Austria, co-chair of the educational comitee of the European Mathematicla society [konrad.krainer@uni-klu.ac.at](mailto:konrad.krainer@uni-klu.ac.at)

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#### **17. Final checklist to send with this form: annotated table of contents, CV, any other relevant information**