

**Zeitschrift:** L'Enseignement Mathématique  
**Herausgeber:** Commission Internationale de l'Enseignement Mathématique  
**Band:** 49 (2003)  
**Heft:** 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

**Kapitel:** 3.2 Application problems

#### **Nutzungsbedingungen**

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Siehe Rechtliche Hinweise.

#### **Conditions d'utilisation**

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. Voir Informations légales.

#### **Terms of use**

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. See Legal notice.

**Download PDF:** 18.04.2025

**ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>**

### 3.2 APPLICATION PROBLEMS

There exists a plethora of applications and modelling problems and materials for use in mathematics classrooms at various educational levels. These materials range from mere ‘dressed up’ mathematical problems to authentic problem situations.

*ISSUE 2. What does research have to tell us about the significance of authenticity to students’ acquisition and development of modelling competency ?*

Examples of specific questions :

- What authentic applications and modelling materials are available worldwide ?
- Taking account of teaching objectives and students’ personal situations (experience, competence), how can teachers set up authentic applications and modelling tasks ?
- How does the authenticity of problems and materials affect students’ ability to transfer acquired knowledge and competencies to other contexts and situations ?

### 3.3 MODELLING ABILITIES AND COMPETENCIES

With the teaching and learning of mathematical modelling and applications, many goals and expectations are combined.

*ISSUE 3a. How can modelling ability and modelling competency be characterised, and how can it be developed over time ?*

Examples of specific questions :

- Can specific subskills and subcompetencies of ‘modelling competency’ be identified ?
- How can modelling ability be distinguished from general problem solving abilities ?
- Are there identifiable stages in the development of modelling ability ?
- What are characteristic differences between expert modellers and novice modellers ?
- What is the role of pure mathematics in developing modelling ability ?

*ISSUE 3b. How can modelling in teacher pre-service and in-service education courses be promoted ?*

Examples of specific questions :

- What is essential in a teacher education programme to enable prospective teachers to experience real, non-trivial modelling situations, and hence acquire modelling competencies for purposes of teaching applications and modelling in their professional future ?
- Which training strategies can help teachers develop security in using applications and modelling in their teaching ?

### 3.4 BELIEFS, ATTITUDES, AND EMOTIONS

Beliefs, attitudes and emotions play important roles in the development of critical and creative senses in mathematics.