Connected classroom technology to promote formative assessment in mathematics: FaSMEd in Italy

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THE FASMED PROJECT IN ITALY:
THE CONTEXT

25 teachers from three clusters of schools:
• Istituto Comprensivo di Vinovo (TO)
• Circolo Salgari di Torino
• Istituto Comprensivo di Carcare (SV)

• Primary (grades 4-5) and Lower secondary (grades 6-7) schools.
• Mixed ability classes

From 5 to 14 lessons for each class

About 450 hours of teaching experiments in the periods April-May 2015 and October-December 2015
THE FASMED PROJECT IN ITALY:
KEY-ASPECTS OF OUR METHODOLOGY

METACOGNITION
(Schoenfeld, 1992)

MAKING THINKING VISIBLE
(Collins, Brown and Newmann, 1989)

ARGUMENTATION

FORMATIVE ASSESSMENT

FOCUS ON ACTIVITIES AIMED AT PROMOTING
THE SHARING OF STUDENTS’ PROCESSES,
PRODUCTIONS AND REFLECTIONS

THE FASMED PROJECT IN ITALY:
CHOICE OF THE TECHNOLOGY

Connected classroom technology

- Tablets for the students, who work in pairs or groups of three
- Computers for the teachers
- Interactive whiteboard or data projector

It enables to:
• show (to one or more students) the teacher’s screen and also the students’ screens;
• distribute documents to students and to collect documents from the students’ tablets;
• create instant polls and to immediately show their results to the whole class.
THE FASMED PROJECT IN ITALY:
CONTENTS AND ACTIVITIES

Content: Early Algebra
Focus on Relations, Functions and their different representations

Adaptation of activities from:
- the ArAl Units
- the Toolkit activity “Interpreting distance-time graphs”

Three main categories of different worksheets:
1. PROBLEM WORKSHEETS
2. HELPING WORKSHEETS
3. POLL WORKSHEETS

THE FASMED PROJECT IN ITALY:
THE DIGITAL WORKSHEETS

PROBLEM WORKSHEETS
- worksheets introducing a problem and asking one or more questions

"The archaeologist Giancarlo"

On the ArAl mountain, in the middle of the desert, the archaeologist Giancarlo has found some graffiti engraved on the rock. He reproduced the incisions on his notebook, writing their heights. This is the page where Giancarlo reproduced the incisions.

- 28 cm
- 14 cm
- 23 cm
- 7 cm

Giancarlo’s collaborators discuss a lot on the relationship hidden in the graffiti. Nicola says: “You can find the height of an incision only if you multiply 7 by the number of the tips on its head”. Battista concludes: “It is evident that, dividing the height of the incisions by 7, you can find the number of tips”. And Paolo: “What are you saying? The number of tips is the result of the division of the height by 7”.

1. What do you think about Nicola, Battista and Paolo’s statements? Do you agree with them? Explain why.
HELPING WORKSHEETS
aimed at supporting students
who meet difficulties with
the problem worksheets

THE FASMED PROJECT IN ITALY:
THE DIGITAL WORKSHEETS

POLL WORKSHEETS
worksheets prompting
a poll between
proposed options

THE FASMED PROJECT IN ITALY:
THE DIGITAL WORKSHEETS
THE FASMED PROJECT IN ITALY:
TYPICAL STRUCTURE OF A LESSON

Problem worksheets are sent to the students.

Students work in pairs or groups of three and provide a written answer to the questions.

Students send back to the teacher their written productions.
THE FASMED PROJECT IN ITALY:
TYPICAL STRUCTURE OF A LESSON

*Helping worksheets* could be sent to some groups.

Students' written productions are displayed on the IWB and feedback is given during a classroom discussion.
THE FASMED PROJECT IN ITALY:
TYPICAL STRUCTURE OF A LESSON

Poll worksheets could be used to foster the comparison and to give further feedback.

THE FASMED PROJECT IN ITALY:
OUR RESULTS

➢ Evolution and refinement of the classroom methodology

- Validation and refinement of the digital worksheets
- Increasing and more systemic use of instant polls

- Increased attention to using the helping worksheets at a meta-cognitive level

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THE FASMED PROJECT IN ITALY: OUR RESULTS

- Evolution and refinement of the classroom methodology: FOCUS OF CLASSROOM DISCUSSIONS

**Difficulties** as a starting point of FA

Criteria for the **choice** of students’ productions to show

Criteria for **assessing argumentation**
(correctness, clearness, completedness)

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THE FASMED PROJECT IN ITALY: OUR RESULTS

- The theoretical tools for the analysis

Use of the FaSMEd tridimensional framework and integration with further lenses
(Hattie & Temperley’s levels of feedbacks)

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Towards the elaboration of theoretical elements

- Analysis of the role of the teacher and of her strategies of feedbacks;
- Identification of sub-levels of feedback, with a specific focus on the mathematics at stake;
- Analysis of the role played by digital worksheets in the activation of FA strategies;
- Analysis of the dynamics that characterise the interplay between different FA strategies.

Thank you!