



**FAMT&L**

**FORMATIVE ASSESSMENT IN MATHEMATICS FOR TEACHING AND  
LEARNING**

*Work Package 8 - Development of the web repository*

**Deliverable D8.4 Short Videos**

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<b>Nature</b>	<input type="checkbox"/> Report <input type="checkbox"/> Service / Product <input type="checkbox"/> Demonstrator / Prototype <input type="checkbox"/> Event <input checked="" type="checkbox"/> Other – videos		
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<b>Description</b> (limit 1000 characters)			
Each partner realized some short videos, for the dissemination and exploitation of projects results, and in particular referring to the experiences realized and analyzed in WP2 and WP3 and the activities carried out in WP4 (at last 5 videos).			

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## 1. Introduction

Is now shared at international level, in the field of teaching training, how the relationship between theory and praxis, between knowledge and competences is important. In this line of thought, it is particularly relevant the concept of recursively between theory and praxis, meaning an alternation between distinct (but at the same time interrelated) steps in a specific learning process (Atlet, 2003) which are able to translate theoretic knowledge and methodology into an action and also, at the same time, reflection on the action itself, a reflection that, in turn, becomes new knowledge, and so forth.... (Bolondi et al, 2017). In this sense, the identification of the most suitable ways to conceptualized their practices in teaching is a fundamental step and the video analysis is an increasingly used methodology.

As we can read in Bolondi et al. (2017), the presence of videos in training activities for teachers is more and more common, with several modalities in their use (Masats and Dooly, 2011), as a observation and analysis tool and object, as an example or a display (video modelling), as a record of the teachers themselves (video coaching). Anyway, as shown by several researches (eg Santagata, Zannoni, & Stigler, 2007), during the training videos became a tool to integrate and support the direct observation and the learning of good practices (in our case, of formative assessment in mathematics). Several studies confirm the effectiveness of video-based interventions in the training of teachers and one of the main objectives of the project was the training teachers with video analysis.

In this point of view videos have assumed a crucial role and, as we can see in the follow paragraphs we dedicate a lot of studies and times for their realization.

Initially, in order to effectively meet the formative needs of teachers, we analysed the results of the initial questionnaires carried out both by students and teachers (see WP2 reports); we then focused on production of videos, on the one hand of methodological point of view (see WP3 reports), and on the other to meet the teachers needs and the aim of training course (see WP4 reports).

## **2. The realization of videos**

This section presents the main features of produced videos and the educational choices that are the basis of their production.

Videos were created from the perspective of teacher training and they are performed referring to the experiences realized and analysed in WP2 and WP3.

### **2.1 *An answer to the training needs of teachers***

Videos were created from the perspective of teacher training. They were in fact made after analysing the data of the teachers and students questionnaires (WP2).

As shown by the results of investigation of teachers and students beliefs and attitudes, teachers will use in class a few of formative assessment practices. There is generally a lack of implementation of formative assessment techniques and tools and there is a lack of knowledge them reflected in poor ability to implementing them into practice.

“What is shown is a common penchant towards the use of traditional practices of summative assessment and a difficulty in perceiving formative assessment as an useful tool to improve teaching and learning.” p

One of the main objectives in this regard was therefore seek together to identify good practices and find ways to use those in classroom activities.

Every video we is labelled with metadata which allow its categorizing and a sequent descriptive analysis that will help us also for define the profiles of assessment practices in the classroom. To do this we have construct the FAMT&L grid, set up specifically for micro-sequences (short videos) a valuable tool for observation and analysis (obviously produced a list of descriptions of situations which cannot be exhaustive since it is not possible to foresee all the meaningful class situations).

### **2.2 *The use of videos in pilot courses***

Videos are used a lot in pilot training courses, so, as we can see in report WP4, construction of video is way be accompanied with the design of the courses. In the majority of course, almost each lesson are focus on one phase of formative assessment.

Inside WebRepository it is possible to do some research referring each the following item and this was very helpful and suitable during the pilot training courses.

In accompaniment to the theory and to the analysis of tools and techniques referring to the specific formative assessment phase, we have been identified and analysed also videos from web repository relating to that. Video analysis and discussions emerged following were crucial and decisive for the conduct of courses.

### **2.3 *The realization of videos in classroom***

Each partner has performed some videos recovering classroom situations in which it held math lessons. This works has made in collaboration with associated schools teachers and in the majority of case the professors and the researchers of the project have been carried out training course on formative assessment in mathematics with

those teachers. As we can see in report WP7, mainly in Italy, Cyprus and Switzerland several training meeting with associated schools teachers are performed.

With teachers we have done theoretical arguments on formative assessment, and discussed together on formative assessment tools and techniques. We also analyzed the assessment in mathematics and before recording the lessons we have discussed also about any classroom situations that can represent good practices of formative assessment in mathematics. In particular the French group has led teachers preparing with them detailed the situation before video shot.

In line with what was agreed and stated (see WP3 reports) during every video recovery there was a videographer with one or more cameras and one or more microphones.

Often there were also present the researchers but only as observers and they did not intervene and they never changed the conducting of the lesson.

Before performed videos, we have obtained the authorization from the parents of pupils to register children and to use video shoot for research purposes; in general we still often focused the attention on the teacher practices, trying to have a few scenes in which children appear directly.

As regard technical aspect, the France group has been working video-analysis for years, hence their specific expertise have been a very valuable support for our work and we have studied and analyzed their suggested hardware and software tools (see D3). In according to FAMTL&L Project needs and aims, we choice a specific system (our Web Repository), which took its inspiration from the several software we have examined.

Web Repository allows us, to gather the videos which have been endowed of metadata and analysed into a sort of on line catalogue which allows to easily search and find the archived material using different criteria of searching. As we can see below this way of organizing is very functional both to gather quantitative data both to work at qualitative level with teachers during pilot course (in according to WP4 reports).

### ***2.3.1 The aims of the videos***

Videos were produced with the cooperation of the associated schools and in some cases also with other teachers contacted through dissemination actions of the FAMT&L project. All teachers involved are therefore argued least some training on formative assessment in mathematics. Despite this, some videos also show examples of bad teaching practices.

The purpose of project was to analyse good practices of formative assessment in mathematics. For this, from long video we cut scenes that portray good practice of formative assessment. Of course, even in the short video there are still moments that are bad practices and, as we can see in WP4, also this moment are underlined during training course and we discuss a lot with teachers also about them.

Moreover, this fact is in line with the construction of FAMT&L Grid (see WP3 reports). In fact, the indicators of FAMT&L grid represents not only "positive" indicators and consequently sometimes negative indicators were also used to label the video in Web Repository.

### 3. Videos productions

#### 3.1 Some features of videos produced

The table below (Table 1) reports some relevant data relating to short videos uploaded in Web Repository by each partners. In total were produced 8 Long Video and 126 Short Video.

	ITALY	SWITZERLAND	CYPRUS	FRANCE
Number of Long Videos	7	1	0	0
Number of Short Videos	90	11	16	9

As regard the data in reference to the global indicators, the most interesting things that have arisen concern the time and the setting of assessment.

In particular, the time of assessment, the majority of videos (40) are realized in situation of Ex-Post, 19 In Itinere and only 17 Ex-Ante, this confirming a conception of assessment still anchored to a summative assessment, which takes place “at the end”. The main setting of assessment are Work Group (61), Individual assessment (39) and Big Class (23). The high number of situations in which the class was willing to groups is a very positive thing; these situations often encourage the emergence of peer assessment practices, good formative assessment practices.

#### 3.2 The impact of mathematics contents and capabilities

As we can read in In the first category we consider information on the mathematics contents which are the teaching subject for each lesson/situation. With a view on the complexity of the teaching-learning process, clearly activities in this category cannot just be considered as contents in mathematical knowledge (maths objects), but we had to widen our horizon in order to take into account the abilities and skills that the students put into play in the learning process. Thus, we adopted a two-dimensional frame contents/capabilities, a scheme based on the OECD-Pisa approach (OECD-Pisa, 2013). For contents: Numbers; Spaces and shape; Uncertainty and data; Relations and functions. For capabilities: Communication; Mathematizing; Representation; Reasoning and Argumentation; Devising strategies for problem solving; Using symbolic, formal and technical language and operations; Using mathematical tools.

So, referring OECD-Pisa Mathematics Framework, we have identified in each video the main and the secondary content between the follow mathematical content:

Spaces and Shape, Relations and Functions, Uncertainty and Data and Numbers. The majority of video are about Spaces and Shape (49) and Relations and functions (35). A lot of research (eg Fandiño Pinilla, 2007) show that it would be good working on all aspects of mathematics learning, and not only on some of these, both while doing classroom activities both while doing assessment. When teachers doing assessment in mathematics, often there is no assessment of all aspects of mathematics learning and this is confirmed by the analysis of the data of our videos, also as regards the identification of skills and capabilities involved in the video-recording lessons. Regarding mathematics capabilities, in our videos the most of them present is Reasoning and argumentation, current in 34 videos. All others capabilities are present in almost equal measure, except for Using mathematical tools, only involved in 9 video between all videos.

The list of all videos uploaded in the Web repository is in the D8.4\_Annex.



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