



Support

Pädagogische Hochschule
Schwäbisch Gmünd
University of Education



Coordination

The ScienceMath – Professional Development Concept¹

The 5 elements:

E1 – presentations and workshops at the university – learning the content and material (ScienceMath-modules)

E2 – Intervening period –preparing the material for school

E3 – Workshop at the university – discussion and preparation

E4 – Intervening period – implementation in the classroom

E5 – Seminar at the university – exchange and improvement discussion

Basis Element E1: The basis element is the starting activity for a long term version, the core of the teacher training event or the central part of it at the university resp. organising institution. It can be offered as one single event. Contents, length and intensity can be chosen according to the interests of the participants.

Different possible versions of E1:

Introduction, Presentation/ workshop at the University

Version 1:

Content: background presentation and one or more ScienceMath modules

Duration and kind of activities: afternoon, interactive presentation, discussion, group work, brain storming

Version 2:

Content: background presentation and one or more ScienceMath modules

Duration and kind of presentation: half or full day, interactive presentation, discussion, group work/ workshop with material, brain storming

Version 3:

Content: background presentation and different ScienceMath modules (individual chose)

¹ The ScienceMath Professional Development Concept is evaluated in different European Teacher Training events, esp. in Ljubljana, yearly organized since 2009



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Duration and kind of presentation: one or two days, interactive presentation, discussion, group work/ workshop with material, brain storming

Version 4: European teacher event

Content: background presentation and different ScienceMath modules (individual chose),

Duration and kind of presentation: one week, interactive presentation, discussion, group work/ workshop with material, brain storming

Examples:

Example for a two day event of version 3:

Day 1

▪ Welcome - registration and reception	½ h
▪ Presentation <i>ScienceMath</i> See Annex 1: prepared power-point	1 h
▪ Introduction into the theme groups See Annex 2: modules are according to the special offer	¼ h
▪ Break: Participants chose groups of special interest	¾ h
▪ First group meeting: Introduction into the theme according to the choice of the presenter	½ h
First activities, choosing cooperation partners	1 h
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	4 h

Day 2

▪ Welcome - informal exchange	½ h
▪ Working in the groups Getting familiar with the content and material of the module/s	2 h
▪ Discussion in the group	½ h
▪ Break - lunch	1 ½ h
▪ Working in the group: Preparing own working sheets	3 h
▪ Working in the group: Arranging all needed equipment for teaching the module in school resp. writing a ToDo-list and planning the concrete school project; e.g. prepare a table with room for further remarks	1 h

8 ½ h



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Example (positive evaluated ScienceMath PD-event of Ljubljana 2009) of version 4:

Note: The following programme is a proposal and covering the already practiced event. The offer includes presentations of background ideas, modules, research results and workshops with material. The selection of the modules can change according to the target group and their interests. Material from the concrete held event is available on the website www.sciencemath.ph-gmuend.de > European Teacher Training Event.

Programme

Sunday

Arrival of the Participants for Teacher's Professional Development

Monday

Time	Approx.	Session	Theme
8-12	15 min	Presentation	Welcome, Introduction
	45 min	Presentation	ScienceMath project presentation: Aims and Results
	30 min	Discussion	Participants introduce themselves
	15 min	Coffee	
	120 min	Presentation	Calculus; from physics ...
12-14	Lunch		
14-17	180 min	Workshop	... towards mathematics
17-	Visit downtown		

Tuesday

Time	Approx.	Session	Theme
8-12	30 min	Presentation	Functions and Sounds
	60 min	Workshop	Functional relations Part 1: Introduction and trying the material - a
	15 min	Coffee	
	120 min		Functional relations Part 1: Introduction and trying the material - b
12-14	Lunch		
14-17	60 min	Workshop	Nutrition Circle, Proportions: Similarity and Allometry
	15 min	Coffee	
	90 min	Workshop	Creating interdisciplinary lessons between math and science; Part 1
17-	Free		



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Wednesday

Time	Approx.	Session	Theme
8-12	60 min	Presentation	Experiments and concept of variable
	90 min	Workshop	Functional relations Part 2: Creating own work-sheets
	15 min	Coffee	
	60 min	Workshop	Creating interdisciplinary lessons between math and science; Part 2
12-14	Lunch		
14-20 (or 13 - 20)	360 min	Excursion (Workshop)	Measurements in real world - field work incorporated into science teaching excursion

Thursday

Time	Approx.	Session	Theme
8-12	30 min	Presentation	Concept of parallelism and concept of gravity
	45 min	Presentation	Fermat meets Pythagoras and Fermat's Principle
	30 min	Presentation	Parabola and Technology
	15 min	Coffee	
	30 min	Presentation	Students' discussions about mathematics and society: Modelling population growth.
	60 min	Workshop	Functional relations Part 3: Discussing the module
12-14	Lunch		
14-17	90 min	Workshop	Arithmetic mean and car differential
	15 min	Coffee	
	60 min	Presentation	Logarithms
17-	Typical dinner		

Friday

Time	Approx.	Session	Theme
8-12	30 min	Presentation	Modelling motion: the case of shooting in water
	60 min	Presentation	From coupled pendulum toward Fourier analyses
	15 min	Coffee	
	90 min	Discussion	Final discussion
	30 min	Conclusion and farewell	