

Field Visit Bayreuth

15 – 19 November 2010

Reference Centre University of Bayreuth



Programme

Tuesday 16 th , 2010 Morning			Tuesday 16 th , 2010 Afternoon		
8:00 – 8:20	Transfer to the Markgräfin-Wilhelmine-Gymnasium Bayreuth (MWG)		15:30 – 16:00	Coffee and information: German/Bavarian curricula and national educational standards <i>Dagmar Raab</i>	K 4
8:20 – 8:30	Welcome	MWG			
8:35 – 9:20	Classroom visit (grade 10 – physics, <i>Mr. Beetz</i>)	MWG	16:00 – 16:45	The national programme SINUS and its connections to the Fibonacci programme Discussion with participants <i>Dagmar Raab / Jörg Triebel</i>	K 4
9:20 – 9:35	Break	MWG			
9:35 – 10:20	Classroom visit (grade 6 - mathematics, class for gifted pupils, <i>Mr. Stiegler</i>)	MWG	16:45 – 18:00	Workshop Possibilities to enforce inquiry and problem based education in mathematics: Examples of the MATHCamp, development of rich learning tasks <i>Dagmar Raab</i>	K 4
10:20 – 11:05	Classroom visit (grade 10 – mathematics, <i>Mr. Buchner</i>)	MWG			
11:05 - 12:00	Round table with teachers	MWG			
12:00 – 13:00	Lunch in common with teachers	MWG	18:00 – 18:30	Transfer to the hotel	
13:00 – 13:30	Walk through the Hofgarten to the New Castle				
13:30 – 15:00	Visit of the New Castle		19:30	Dinner	

Programme

Wednesday 17 th , 2010 Morning			Wednesday 17 th , 2010 Afternoon		
8:30 – 9:00	Transfer to the University of Bayreuth				
			13:15 – 15:00	Workshop Inquiry based mathematics education: Hands-on experiments in combination with dynamic learning environments <i>Wolfgang Neidhardt / Edgar Höniger</i>	AI
9:00 – 10:00	JSXGraph and JessieScript as multifunctional tools for mathematics education <i>Michael Gerhäuser</i>	AI			
			15:00 – 16:00	Like a greenhouse – a programme for environmental education Visit of the Ecological Botanical Gardens <i>Daniela Sellmann</i>	EBG
10:15 – 12:00	Participation in the seminar for master students: “Calculus at school” Joint work with teacher students <i>Peter Baptist</i>	S 82			
			16:00 – 16:30	Coffee break	S 748
12:00 – 13:00	Lunch	S 748	16:30– 17:30	Discussion about concepts and examples, possibilities for implementation in the Fibonacci Project <i>Dagmar Raab</i>	K 4
			17:30 – 18:00	Transfer to the hotel	
			19:30	Inquiry based dinner	

Programme

Thursday 18 th , 2010 Morning		
8:00 – 8:30	Transfer to the Graf-Münster-Gymnasium	
8:30 – 9:15	Classroom visit (grade 6 – mathematics, <i>Mr. Oetterer</i>)	GMG
9:15 – 10:15	Information about GMG, discussion with the deputy head teacher	GMG
10:15 – 11:00	Classroom visit (grade 9 – IT, <i>Mr. Oetterer</i>)	GMG
11:00 – 11:30	Transfer to the University of Bayreuth	
11:30 – 12:30	Discussion about the classroom visits Exchange of information and discussion among the participants: Differences between the educational systems, national needs and existing concepts <i>Dagmar Raab</i>	K 4
12:30 – 13:30	Lunch	S 748

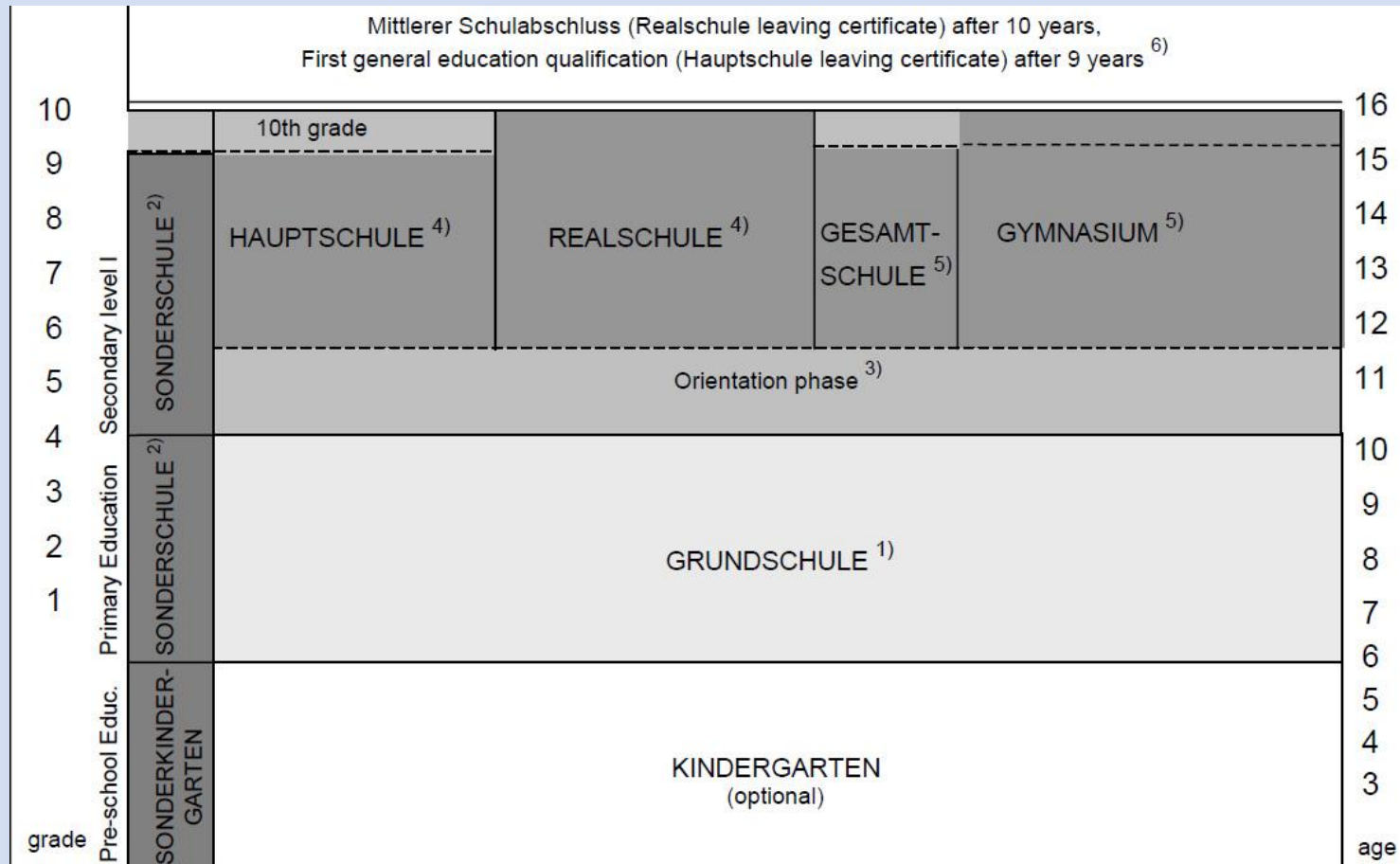
Thursday 18 th , 2010 Afternoon		
13:30 – 15:00	Feedback and discussion about the Field Visit, Planning of future activities. <i>Dagmar Raab</i>	K 4
15:00 – 15:30	Coffee break	S 748
15:30 – 17:30	Work on common topic 1 <i>Dagmar Raab</i>	K 4
17:30 – 18:00	Transfer to the hotel	
	Free Evening	

German/Bavarian Curricula and National Educational Standards

Basic Structure of the Educational System in the Federal Republic of Germany

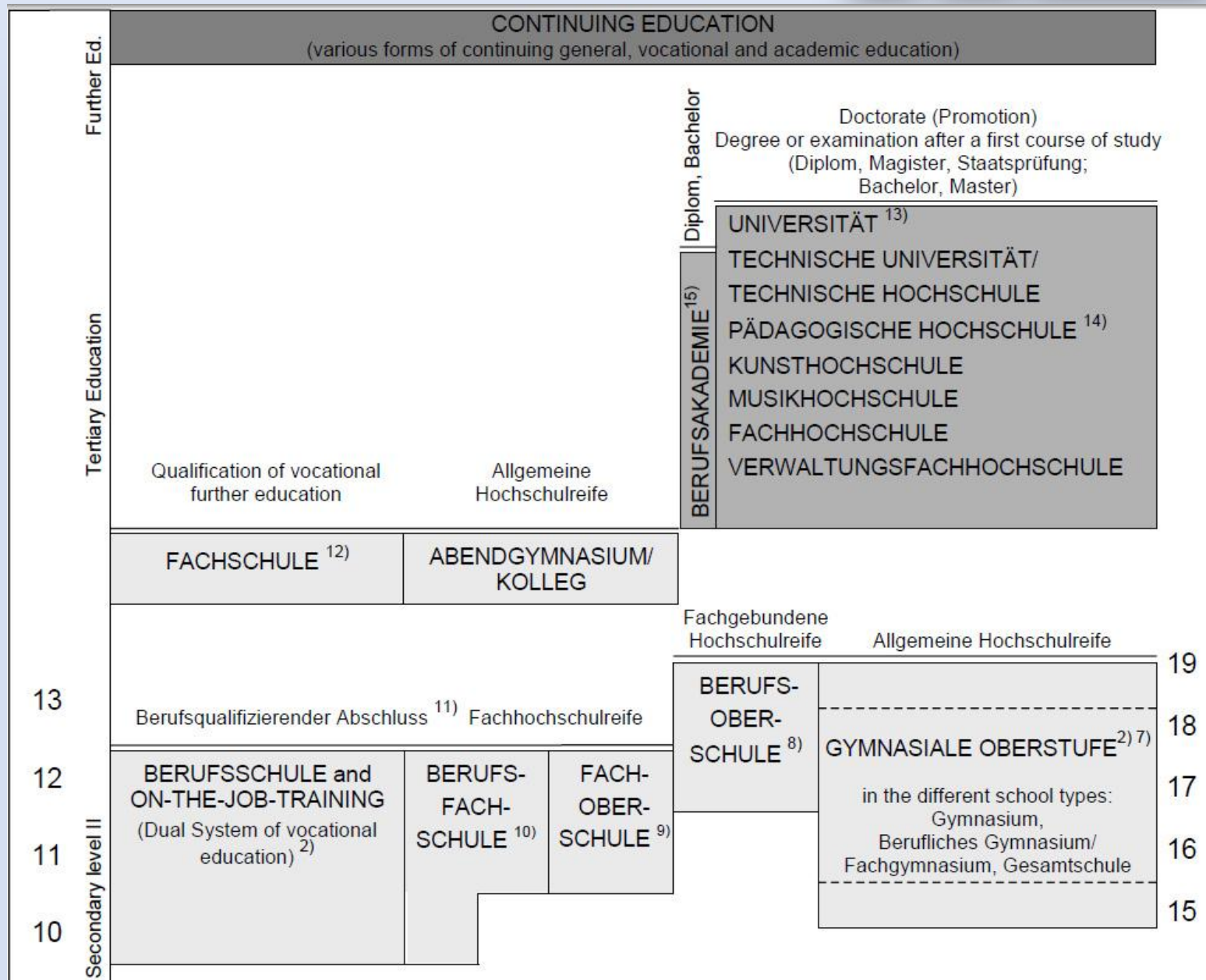
The educational system is divided into:

- pre-school education,
- primary education,
- secondary education,
- tertiary education and
- continuing education.



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Basic Structure of the Educational System in the Federal Republic of Germany



Basic Structure of the Educational System in the Federal Republic of Germany

The cultural sovereignty (*Kulturhoheit*):

- Each of the 16 Länder bears responsibility for its educational and cultural policy.
- In consequence there are 16 different educational systems in Germany, depending on the governing parties and thus often changing after elections.
- Cooperation and coordination should be done by the Standing Conference of the Ministers of Education and Cultural Affairs (*Ständige Konferenz der Kultusminister der Länder*)

The advantages of cultural sovereignty: See a nice example

Basic Structure?

There are schools which offer both courses: *Hauptschule* and *Realschule*
The names for those schools differ from one Land to another:

- Sachsen: *Mittelschule*
- Thüringen: *Regelschule*
- Saarland: *Erweiterte Realschule*
- Bremen, Sachsen-Anhalt: *Sekundarschule*
- Hamburg: *Integrierte Haupt- und Realschule*
- Berlin, Hessen, Mecklenburg-Vorpommern, Niedersachsen:
Verbundene oder Zusammengefasste Haupt- und Realschule
- Mecklenburg-Vorpommern, Rheinland-Pfalz: *Regionale Schule*
- Brandenburg: *Oberschule*
- Rheinland-Pfalz: *Duale Oberschule*
- Schleswig-Holstein: *Regionalschule and Gemeinschaftsschule*
- Bavaria: *Mittelschule* (brandnew!)

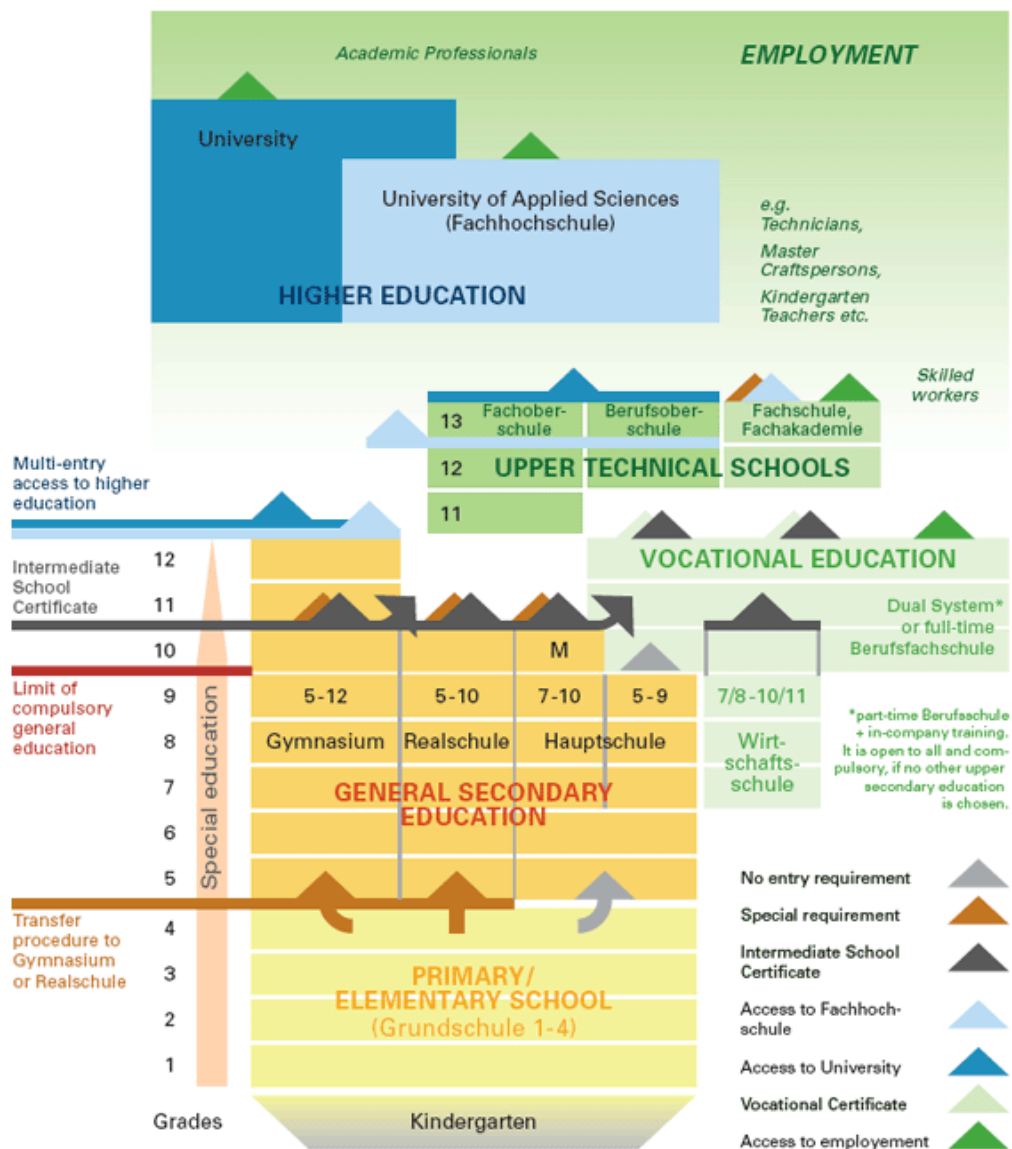
comprehensive schools (*Gesamtschulen*) as well fall in this category.

Much easier, isn't it?

Lehrpläne (nach Schularten)

- ☐ Berufsfachschule (genehmigter Lehrplan - gültig)
- ☐ Berufsfachschule (Lehrplanentwurf)
- ☐ Berufsoberschule (genehmigter Lehrplan - gültig)
- ☐ Berufsoberschule (Lehrplanentwurf)
- ☐ Berufsschule (genehmigter Lehrplan - gültig)
- ☐ Berufsschule (Lehrplanentwurf)
- ☐ Berufsschule (zeitlich befristeter Lehrplan - läuft aus)
- ☐ Fachakademie (genehmigter Lehrplan - gültig)
- ☐ Fachoberschule (genehmigter Lehrplan - gültig)
- ☐ Fachschule (genehmigter Lehrplan - gültig)
- ☐ Fachschule (Lehrplanentwurf)
- ☐ Fachschule (zeitlich befristeter Lehrplan - läuft aus)
- ☐ Berufliche Förderschulen (genehmigter Lehrplan - gültig)
- ☐ Berufliche Förderschulen (Lehrplanentwurf)
- ☐ Förderschulen (genehmigter Lehrplan - gültig)
- ☐ Grundschule (genehmigter Lehrplan - gültig)
- ☐ Gymnasium G8 (genehmigter Lehrplan - gültig)
- ☐ Gymnasium G9 (genehmigter Lehrplan - gültig auch für G8)
- ☐ Gymnasium G9 (zeitlich befristeter Lehrplan - läuft aus)
- ☐ Hauptschule (genehmigter Lehrplan - gültig)
- ☐ Hauptschule M-Zug (genehmigter Lehrplan - gültig)
- ☐ Realschule R6 (genehmigter Lehrplan - gültig)
- ☐ Realschule R6 (Lehrplanentwurf)
- ☐ Wirtschaftsschule (genehmigter Lehrplan - gültig)
- ☐ Wirtschaftsschule (Lehrplanentwurf)

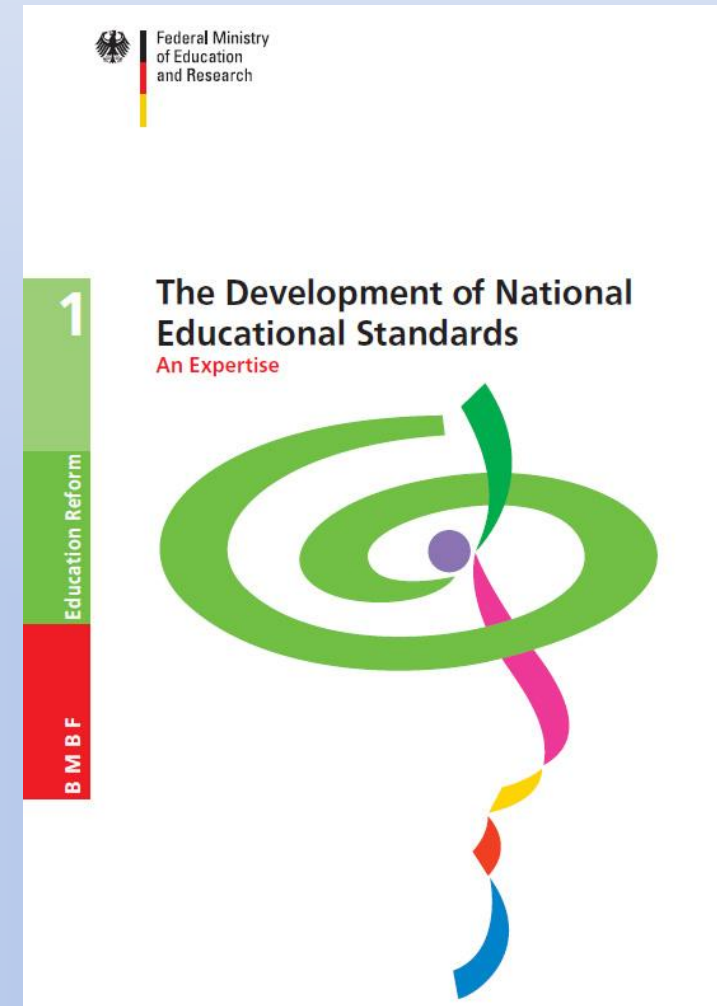
General and Vocational Education Integrated in One Formal System



National Educational Standards

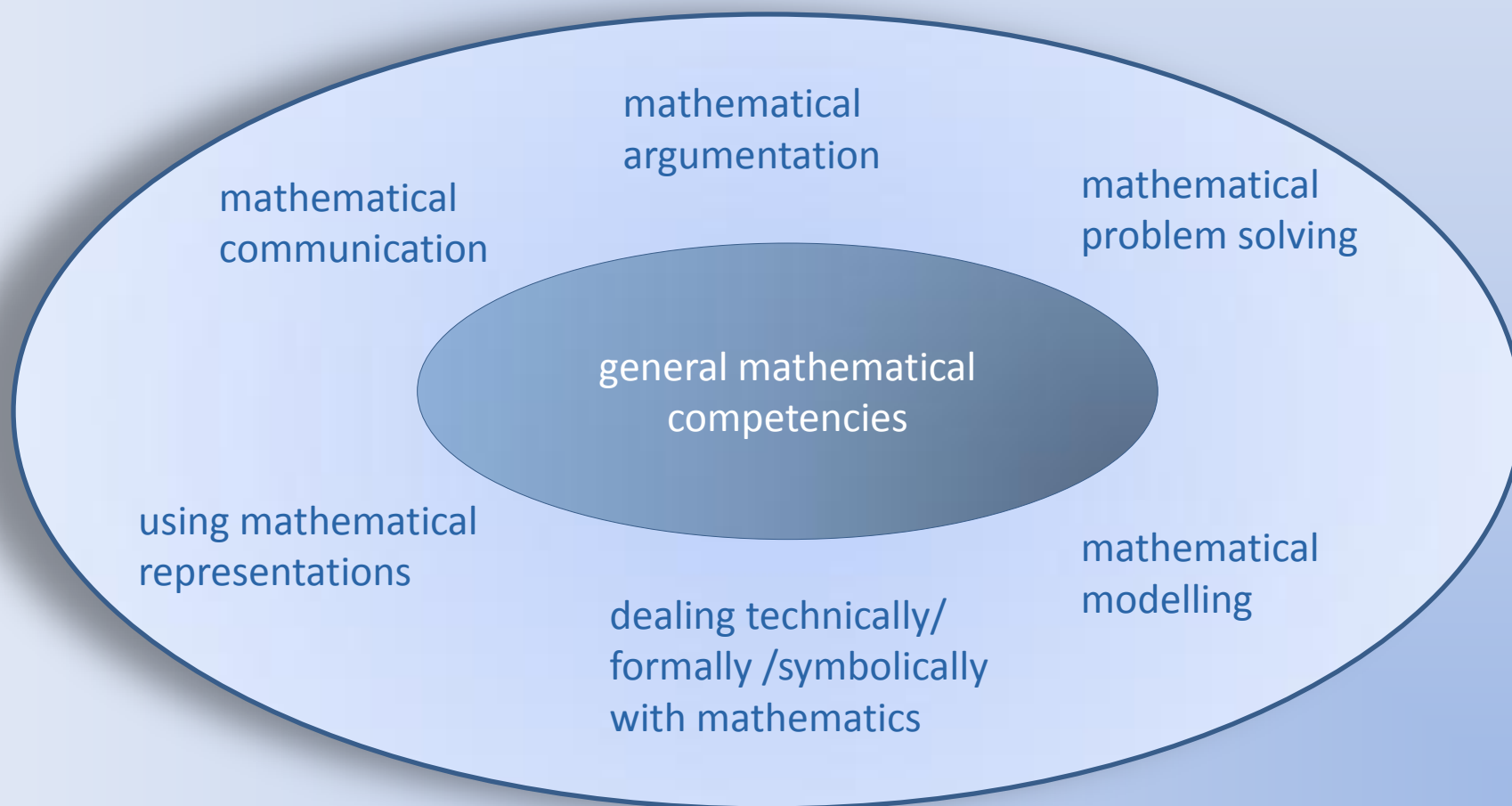
A Short History of a Miracle

1996/1997	TIMS-Study
1998 - 2003	National (!) programme SINUS for increasing the efficiency of teaching mathematics and science
2003	Development and publication of National Educational Standards for multiple subjects by the Standing Conference of the Ministers of Education and Cultural Affairs of the federal states of Germany
2003 – 2007	National programme SINUS-Transfer
2007	Reform of the federal organisation of the German Republic stops all federal educational programmes
until today	The National Educational Standards are the obligatory basis for the curricula of the federal states of Germany
until today	SINUS-Transfer is still alive in various German Länder



National Educational Standards

First Dimension



National Educational Standards

Second Dimension: Three Achievement Levels

(AI) reproduce

Reproduction and direct application of basic ideas, rules, procedures in limited fields and in repetitive contexts

(AII) establish relations

Work in known contexts,
connection of knowledge, skills and capabilities that are known from mathematical contexts in different fields

(AIII) generalise and reflect

work on complex situations et al. with the goal to pose, solve, reason, conclude, interpret or to value a problem

National Educational Standards

Third Dimension: Overarching Ideas (Leitideen)

- numbers
- measuring
- space and shape
- functional relation
- data and chance



Example found in the annotations:
It's time to open a barrel once again!

Walk the Talk!

**Der Worte sind genug gewechselt,
Lasst mich auch endlich Taten sehen!
Indes Ihr Komplimente drechselt,
kann etwas Nützliches geschehn!**

Johann Wolfgang v. Goethe, Faust I

**That's enough words for the moment,
Now let me see some action!
While you're handing out
the compliments,
You should also make things happen.**

