The Role of
ICT and Informatics
in Austria's AHS

Peter Micheuz
March 2005, University Klagenfurt

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The Role of ICT and Informatics in Austria's AHS

Introduction

AHS:
We are talking about ~200.000
of 1.200.000 pupils/students
in Austria

Lower level: grades 5-8: ICT?
Higher level: grades 9-12: Informatics?

Statistics about mere survey numbers
are easily available ;-) [official statistics]

Due to reinforced autonomic
develepments we have very little
qualitative information about what
is really going on in
ICT/Informatics lessons ;-(

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Introduction

We have severe problems with a well-founded and scientifically proven terminology:

What is the difference between ICT and Informatics?
Mathematics gives the answer!
I,C,T is a definitely a subset of **I**,N,F,O,R,M,A,**T**,I,**C**,S

What is the difference between **IT** and **ICT,** that is between
Information **Technics** and Information and Communication **Technology**?

Is there a valid definition of the term **Information,** we can build on?
Why do we set **Information** and **Communication** at the same level?
Is not **Information** more general?
Or should we replace **Information** with **(digital) data?**

Dont worry, let us try to find a „pragmatic" approach…

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ICT – Informatics – computer science

Can these assignments help us?

ICT ⇔ **instruction, training, practical, applying software, skills and competencies**

Informatics ⇔ **general education, e-literacy, theoretical, developing and understanding software**

Technology:
The study of or a collection of techniques (Wikipedia!)

The words *informatique* in French and *Informatik* in German do **not** mean the same as *informatics*.

Rather, they are much closer to **computer science**.

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## Facts beyond theoretical considerations

Facts:

The subject „**Informatics**" exists and has been established in the AHS-Oberstufe since 1985 (obligatory and as elective course, centralized curriculum)
Since 1990 this subject is offered in the grades 7 and 8 as (well accepted) courses without obligation
This shift from the upper secondary level to the lower secondary level is still going on!

School autonomy in 1995 lead to many school profiles, where Informatics plays an important role.

1996
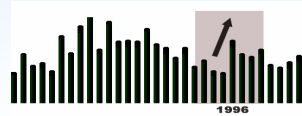
Legitimation of the subject Informatics

Recent report from Austria's Ministry of Education

• Autonomy of schools to alter timetables
  and introduce new subjects
• New curricula
• Change from input orientation to measuring output
• Establishment of educatiuonal standards
• Offering support of the ECDL (and other IT-certificates)

Legitimation of the subject Informatics

Deriving the necessity and **legitimation**
for an i**ndependant** subject Informatics at schools

Efforts in Germany:
• Schwill (Fundamental Ideas)
• GI-Recommendations 2000 and 2004
• Breier, Hubwieser, Friedrich, Humbert

Pragmatical approach in Austria:
• Little central controlling at the expense of autonomic
  decisions at schools
• Competition among school(types) in aquiring pupils/students
  by means of a reinforced offer of **Informatics** and **later** upcoming
  ICT ⇨ Is ICT replacing Informatics?

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Results of the autonomy

		Informatics as an elective course	Informatics as a compulsory subject in the framework of autonomic decisions	E-Learning initiatives, integration of the computer in other subjects	No informatics
Upper secondary level	12th grade	Informatics as an elective course	Informatics as a compulsory subject in the framework of autonomic decisions	E-Learning initiatives, integration of the computer in other subjects	No informatics
	11th grade				
	10th grade				
	9th grade	Informatics for all pupils (compulsory curriculum)			
Lower secondary level	8th grade	Non obligatory Introduction into Informatics	Informatics as a compulsory subject in the framework of autonomic decisions	E-Learning initiatives, integration of the computer in other subjects	No Informatics
	7th grade				
	6th grade				
	5th grade				

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An European view

ICT-objectives in schools all over Europe ...

Learning standard software, the search for information, communicating via internet, using ICT to enhance subject knowledge and **developing „programming skills"**

… but the subject „Informatics" is common only in very few countries

Germany, Austria, Latvija, the Netherlands, …

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Informatics as a generic term?

Autonomy in Austria does not lead only to school specific timetables and curricula, but also to various terms for almost the **same** subjects and even contents!
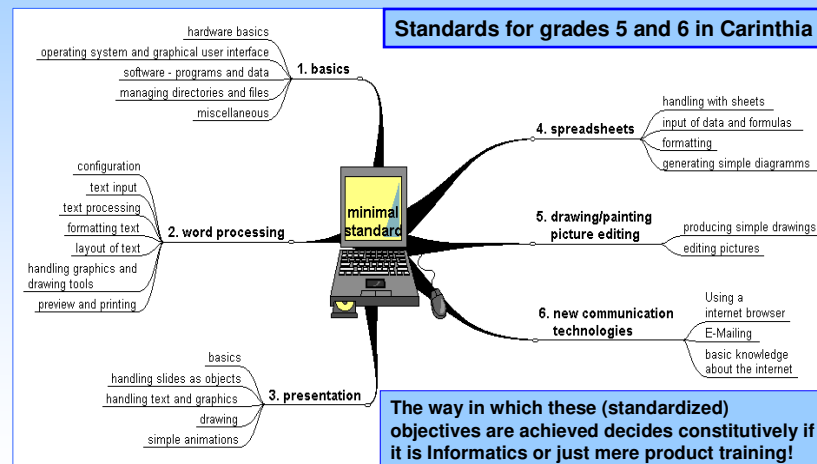
IT, ICT, Introduction into Informatics, basic education in Informatics
or even word processing ⇨ **Suggestion: generic term: „Informatics"**

Hubwieser: „Unfortunately the term Informatics is misused for every activity with the computer. The spectrum reaches from a computer aided video course to elementary typewriting"

Bavaria: Central curriculum for all pupils in the „Gymnasium"
beginning in the grades 6 and 7 in „Gymnasium"
(one hour a week)
Six content areas:
Graphics (OO-principle), editing text, file systems, communication by e-mail, hypertext-structures, first steps in programming (roboter-system)

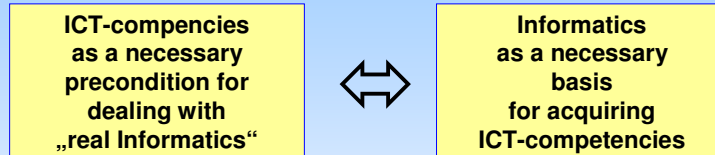# Informatics as a generic term?

Is this „Informatics"?

Standards for grades 5 and 6 in Carinthia

hardware basics
operating system and graphical user interface
software - programs and data
managing directories and files
miscellaneous

1. basics

configuration
text input
text processing
formatting text
layout of text
handling graphics and drawing tools
preview and printing

2. word processing

minimal standard

4. spreadsheets
handling with sheets
input of data and formulas
formatting
generating simple diagramms

5. drawing/painting picture editing
producing simple drawings
editing pictures

6. new communication technologies
Using a internet browser
E-Mailing
basic knowledge about the internet

basics
handling slides as objects
handling text and graphics
drawing
simple animations

3. presentation

The way in which these (standardized) objectives are achieved decides constitutively if it is Informatics or just mere product training!

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Informatics for all – 9th grade

Two complementary views …

ICT-compencies as a necessary precondition for dealing with „real Informatics"	⟷	Informatics as a necessary basis for acquiring ICT-competencies

Specific case in the AHS:
Grade 9 („PISA-age")
subject **Informatics** for all (two hours a week)

The new „abstract" curriculum …

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Curriculum for grade 9

The students should be able to …

- **manage** information and **organize** their learning themselves
  with **suitable** software

- **convert** existing sources of information and **produce** different
  information representations on the basis of previous knowledge

- **use** and **systemize** contents and structures as well as results
  and **present multimedially** their individual work

- **handle standard software** for written correspondence,
  for documentation, for the publication of work, for multimedia
  presentation as well as for commmunication

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Curriculum for grade 9
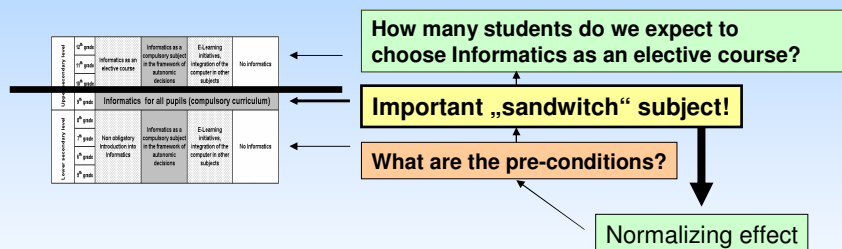
The students should be able to …

- use calculation models and evaluate and interpret the results and
  to use a simple data base

- to know substantial terms and methods of computer science and their
  typical mindsets, their historical development as well as their technical
  and theoretical basis

- get insight into the basic principles of automats, algorithms
  and programs

- know substantial measures and legal bases in connection with data
  security, data security and copyright

- to know about the effects of information technology on employment
  and the society

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Curriculum for grade 9

It is a big challenge how to cope with this guidelines and to handle ICT/Informatics

How many students do we expect to choose Informatics as an elective course?

Important „sandwitch" subject!

What are the pre-conditions?

Normalizing effect

Estimations: 25% of the students, with decreasing trend,
are attendíng elective courses

Efficacy of the curriculum?　What role does the ECDL play in this grade?
Compatibilty with „standard" issues　**(input orientation ⇨ measuring output)**

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Informatics in the AHS for specialists

**In about 10-15% of the AHS at higher secondary level
Informatics
is offered in form of autonomic school profiles
⇨ autonomic curricula with different emphases**

• **Is it desirable to inspire as many students as possible
for the subject Informatics at secondary higher level?**

• **Is there a social and economic demand for that?**

• **Or should informatical education end with grade 9, leaving the
students with more or less ICT-competence and almost
no informatical knowledge**

**If we agree that more than 30% are (still) desirable,
how can this number be achieved?**

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Need for a framework and homogeneity

• The digital gap in this type of school between
  the pupils/students is unacceptably big

• There is a need for a reasonable framework
  which ensures a certain level of e-literacy

• Students leaving a AHS should prove a reasonable
  standard in Informatics competence

• Concretion of the curriculum in the grade 9
  is of high concern

• The elective courses Informatics in the
  grades 10-12 should be „attractive"

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Completing conclusions

• The situation/role/importance of ICT/Informatics in the AHS
  differs extremely from school to school – due to autonomy,
  as well as the IT-knowledge and informatical competencies of the
  pupils/students!

• **Standardizing measures** especially up to and especially for
  grade 9 (end of compulsory education) should be taken

• I suggest the **simplification of the terminology** in the context of
  ICT and **Informatics**.
  Mathematics in schools covers the range from primitive calculating
  to abstract proving.
  Why shouldn't the subject „**Informatics**" stand for elementary
  ICT-competencies as well as for higher issues of „pure Informatics"

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The (ab)normal case after 8 years AHS ;-)

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**There is only one thing left,
I want to mention...**

Thank you for your attention!

**And I do expect questions and
critical remarks ...**