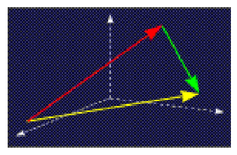
Eine Galerie multimedialer Lernhilfen

mathe online

für Schule, Fachhochschule, Universität und Selbststudium



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Project partners: **Carintia Tech Institute, Villach**
University of Vienna
University Innsbruck
WIFI Vienna and FHW
Pedagogical Academy in Vienna

Abstract

The goal of the project ”New Media in Mathematics Training“ is to integrate elements of electronically supported learning into the mathematical training at universities and ”Fachhochschulen“. New forms of teaching will be applied to a number of selected courses in ”pure“ mathematics as well as in areas needing mathematics as ancillary science.

Preliminaries

Modern information and communication technologies are used rather scarcely in mathematics training and universities and ”Fachhochschulen“.

The following situations occurs often :

- **Only very few time is spent on mathematics training**
- **A variety of approaches and teaching methods**
- **Students knowledge brought from school is diverse and often inadequate**
- **Establishment of necessary common standard**

The project ”New Media in Mathematics Training“ strives to cope with this situation:

- **The technologies of the World Wide Web provide support for the process of understanding and the motivation**

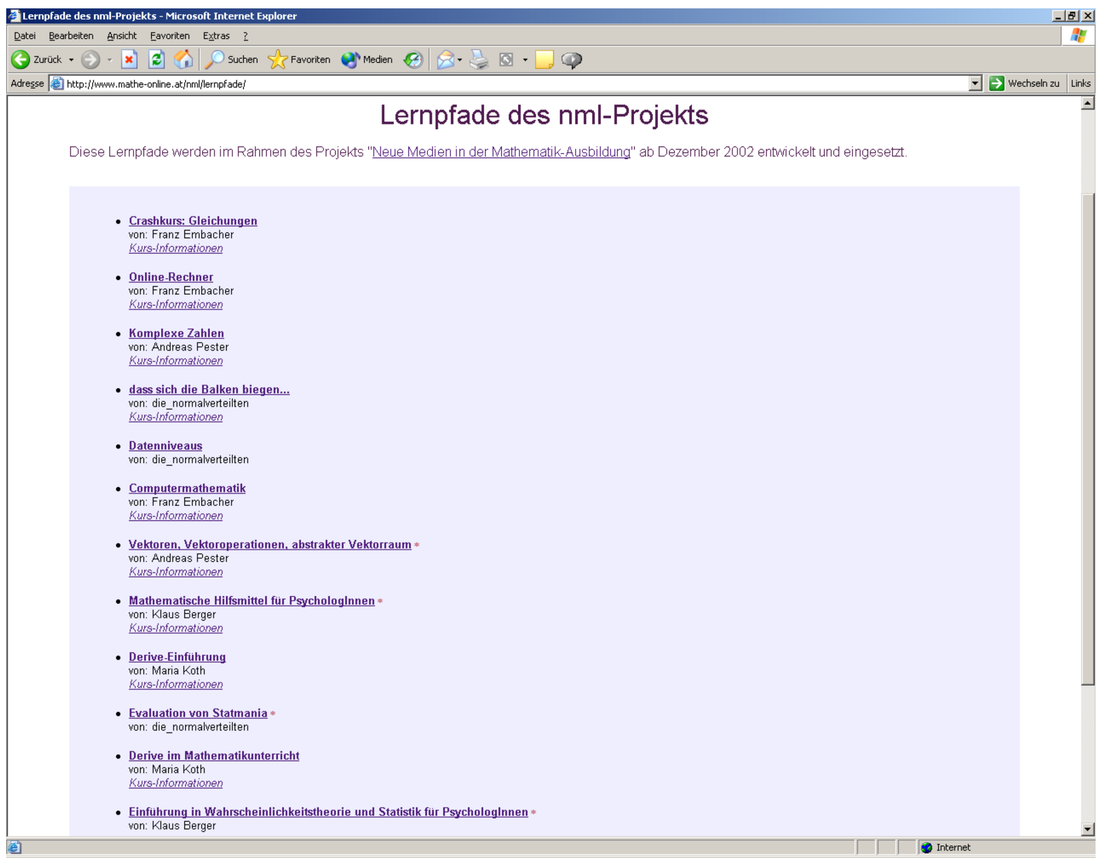
Development and Adoption of Web Based Material

Suitable web based materials are developed and adapted. Thereby two goals have to be met:

- **A high degree of coherence of the material, despite the broad spectrum of areas involved**
- **Consideration of the specific characteristics of the different courses, areas and existing curricula**
- **Interactive learning units (visualizations,…) on mathematical key notions**
- **Mathematical background texts**
- **Exercises**

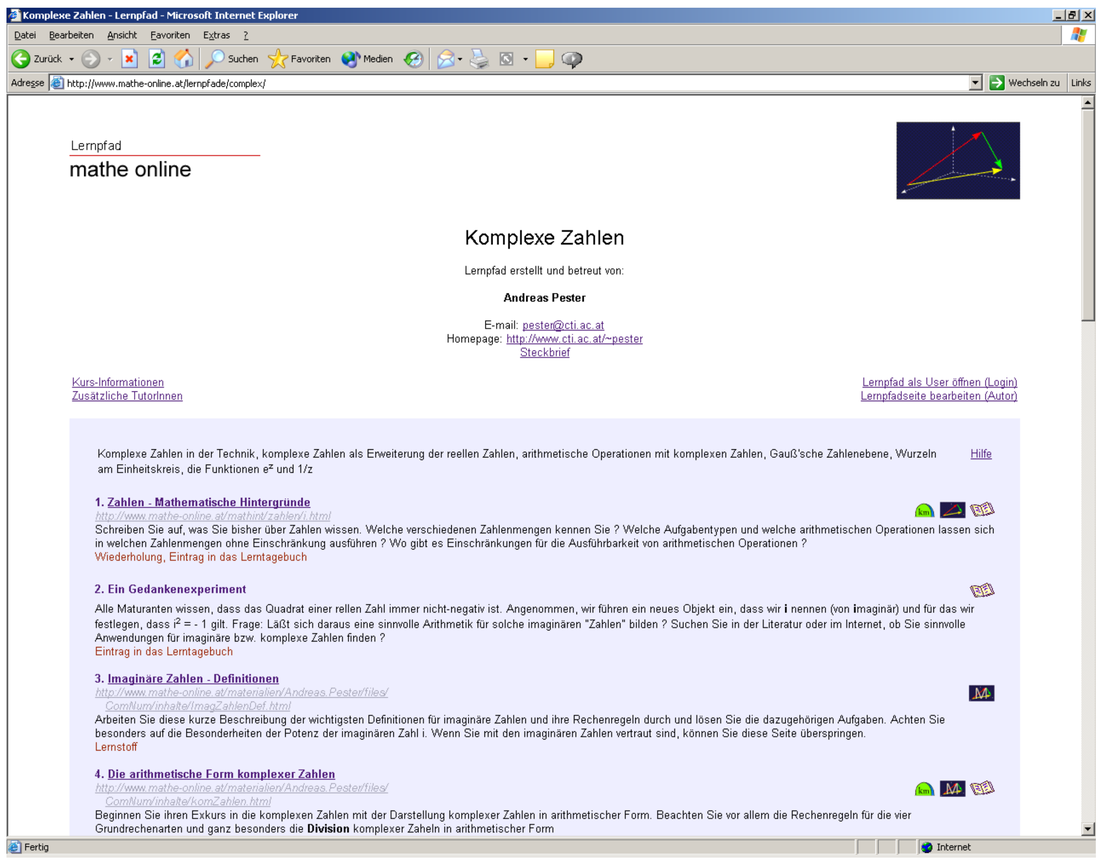
Material shall be applicable as broadly as possible.

This picture shows almost all available courses at this time:



The web platform used is designed as an extension of the existing mathematics portal ”mathe online“ (**http://www.mathe-online.at**, whose smaller English version ”maths online“ is accessible from **http://www.univie.ac.at/future.media/moe/**). Together with material already developed for the use in school math education, this will give rise to a pool of mathematical learning units smoothly passing over from school issues to university content, thus providing a helpful tool for students.

Example, inside of the course “Complex numbers”



Application in Regular Courses

In close cooperation, all partners are developing scenarios for the selected courses. Most courses are ”traditional” university lectures, supplemented by an exercises course. The new concepts are integrated into these structures.

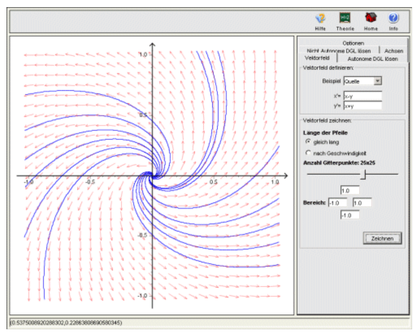
The role of information technology is two-fold:

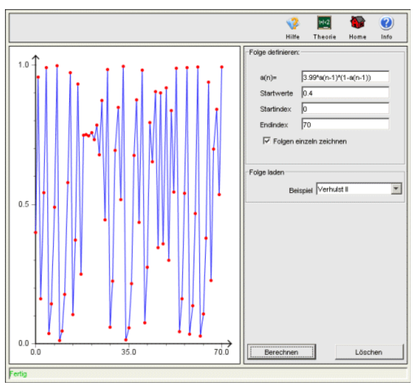
- **Application of interactive learning units**
- **Additional asynchronous tools for (asynchronous) communication among students and between students and lecturers**

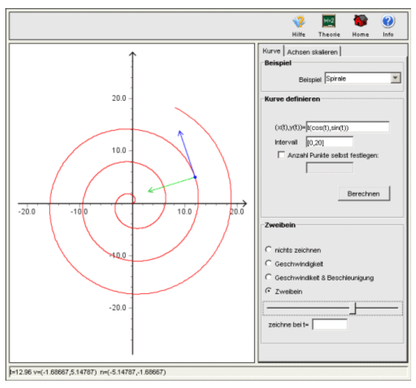
The main motivations for this action are:

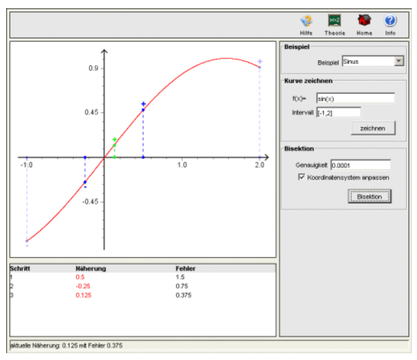
- **Modern web technologies provide new possibilities to understand complex mathematical issues**
- **Extremely large student numbers in some areas**

There are some Java Applet examples:









Live Events

As a more experimental track, live events (synchronous communication), supporting the community aspect of learning. Two scenarios are envisaged:

- **MOO/chat:** The lecturer provides web based material accessed by students using their web browser. This scenario is considered to be suitable for a repetition or summary of a lecture
- **MOO/audio:** The voice of the lecturer is transmitted to the students. This scenario is considered to be suitable for ”question time”-like-events or (panel) discussions about general topics

The events are recorded and made accessible to the students for later use on demand.

Direct link to Live Events: **http://www.mathe-online.at/nml/live-events/**

Afterwards ...

… the material and tools developed will generally be accessible. A thorough project documentation shall help future initiatives to profit from the experiences gained.

http://www.mathe-online.at