

Attracting Students to Science:

NaT-Working Marine Research

from a teacher`s point of view



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Student - Teacher - Scientist **Network** on **N**atural Sciences and **T**echnology

Goal: to stimulate students' interest in sciences by
direct contact with researchers



Leibniz Institute of Marine Sciences



West Shore Campus



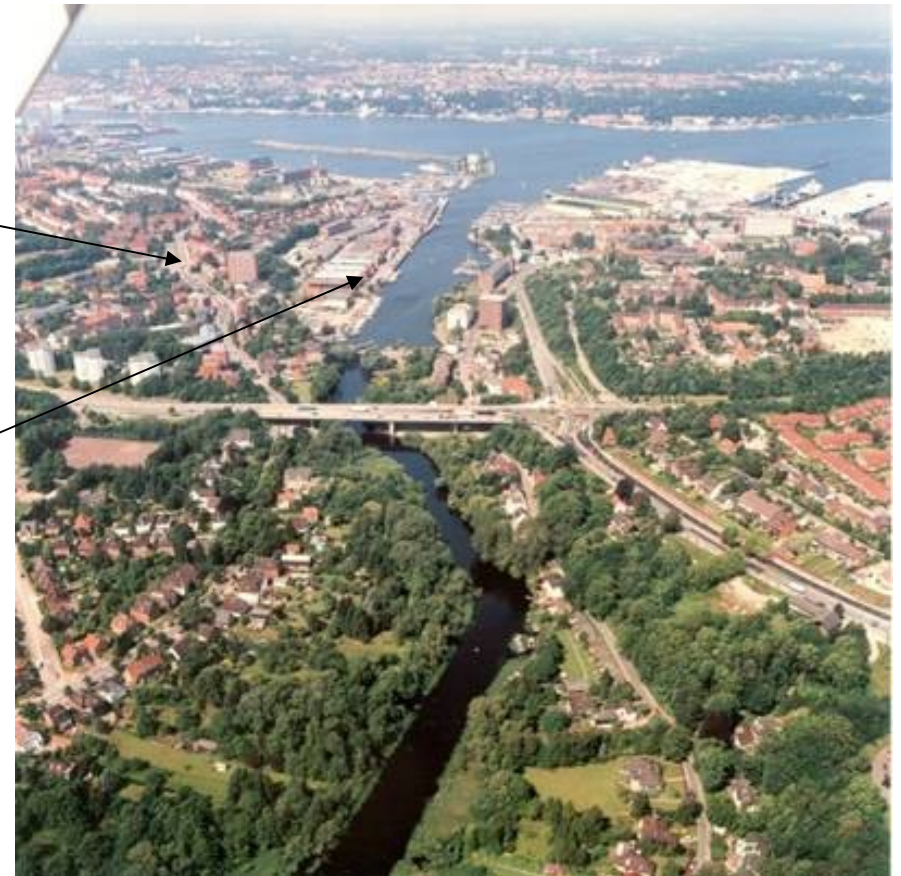
East Shore Campus



Gymnasium
Wellingdorf



IFM-GEOMAR



Research:

IFM-GEOMAR



Cluster of
Exzellenz



„The Future
Ocean“

Schools:

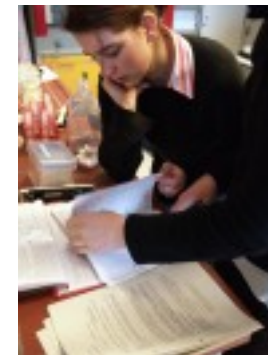
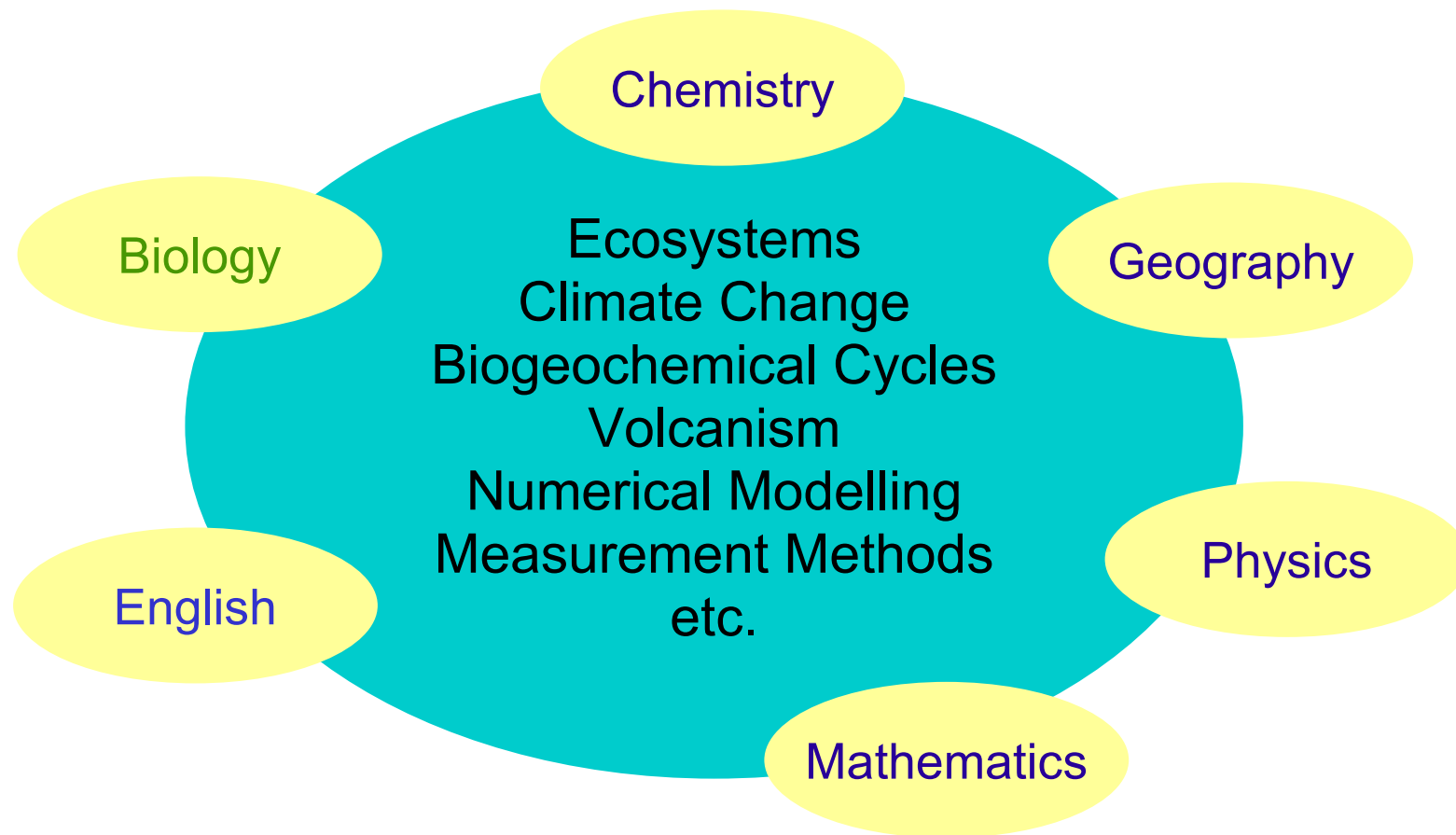
9 secondary schools



Humboldt Schule Kiel

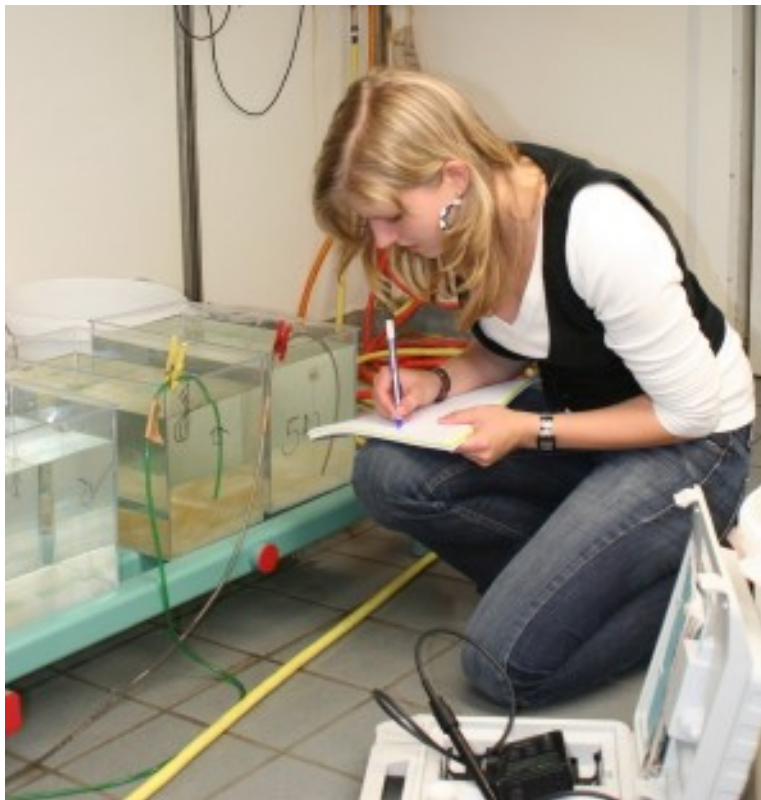


students:
pre-university: 14-18 years
new: 11-13 years



1. Project Work by Students:

- active work in teams instead of passive "entertainment"
- research questions instead of textbook exercises
- integrated into curriculum and graded



... in the laboratory ...



... and at sea ...

2. Teacher Scientist Partnership:

goal: build competence network

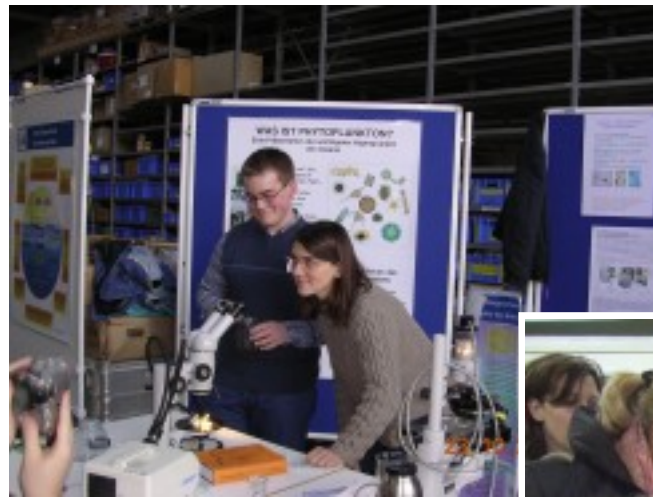
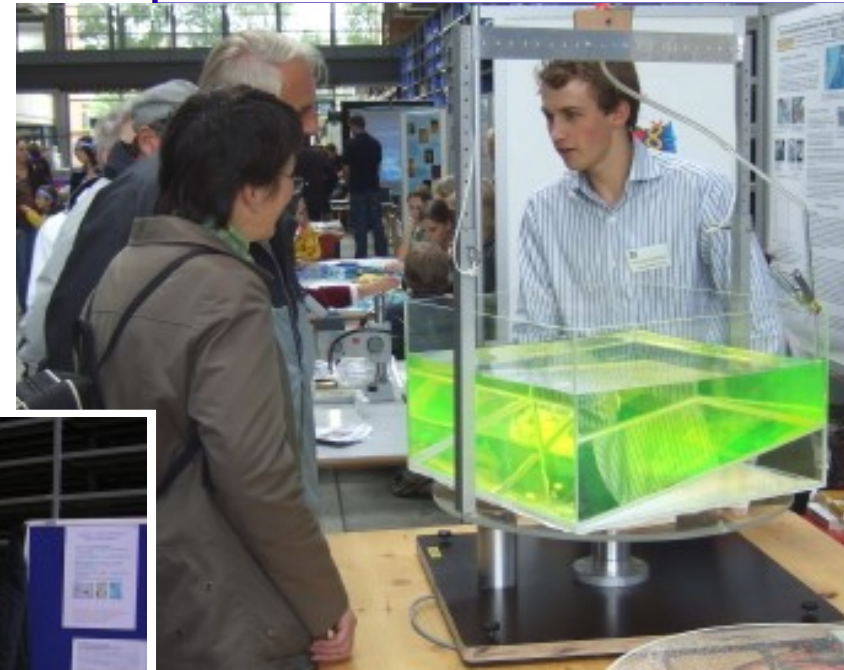
by:

- personal relationships between scientists and teachers
- sharing responsibility for the project
- learning from each other
- teacher training: special sessions and "on the job"



3. Public Presentations and Exhibitions:

- provide challenge
- train communication skills of students
- increase visibility of project
 - inside the schools
 - externally



Individual Theses: (12 months)

2300 years of climate history in a marine sediment core.

Daniela Cochoy (Waldorfschule, grade 12) with Robert Spielhagen (IFM-GEOMAR)

Course Projects: (3-12 months)

Effects of an increase in salinity on the ecosystem of an estuary.

Biology Course, 19 students, grade 12 with Avan Antia & Joachim Dengg



Marine Experiments Club: > Poster

Experiments in the classroom and field excursions

2 groups: grade 5 and grades 6-7 with Sally Soria-Dengg



Article in local newspaper:

The local energy supplier planned to pour water with a high salt concentration into Kiel Fjord and claimed:

“There won't be any significant increase in the salinity.”

First questions by the students:

“Is this statement true?”

“What will happen to the organisms in Kiel Fjord?”

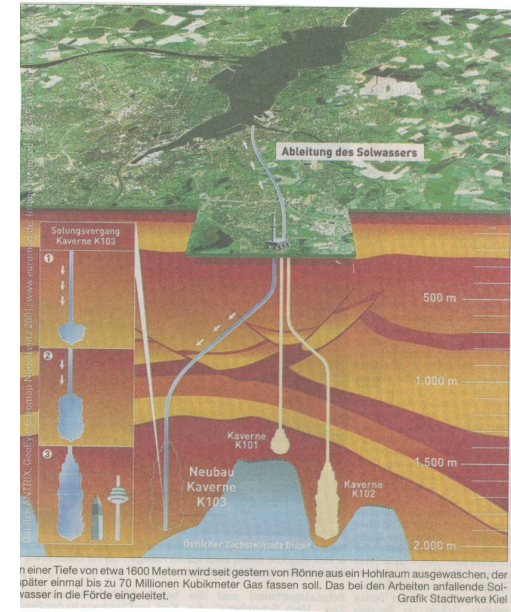
“What are the effects of salinity?”

“How do animals generally cope with changes in salinity?”

Discussions with scientists

Searching for tutors in the institute

Refining research questions



5 groups (3 to 5 students)

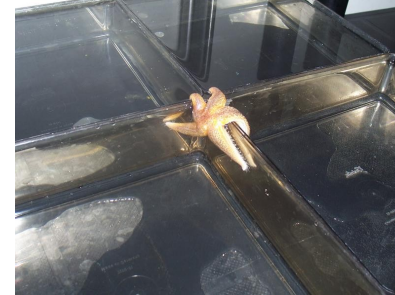
1. Monitoring the Kiel Fjord

data collection with small rv "Polarfuchs"



2. Effects of increasing salinity on starfish

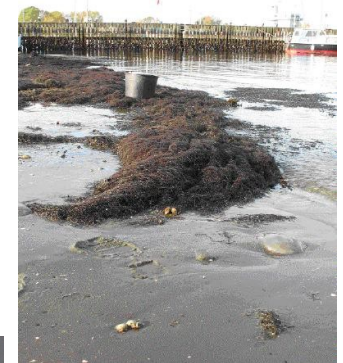
student experiments at the institute



3. Impact of changing salinity on the red algae

Gracilaria vermiculophylla

participation of students in ongoing research project



4. Effects of changing salinity on phytoplankton

student experiment at the institute



5. Theoretical background

library studies, essay

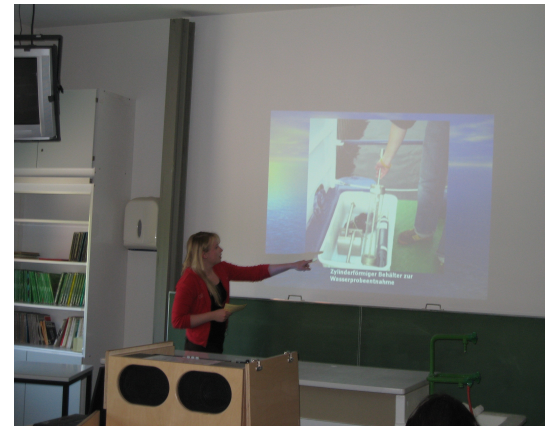


February – May 2007

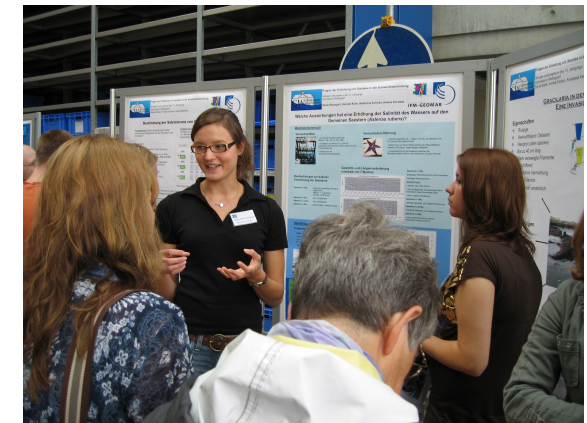
1. Student groups work on projects

**2. Each student group prepares
a written report on their project**

3. Group presentations at school



**4. Course presents the whole project to the public at an
“open day” at the IFM-GEOMAR and at a school event**



5. Website is being prepared

Experiments:

- Starfish will survive an increase of the salinity, but cannot cope with salinities less than 10.
- The red algae *Gracilaria vermiculophylla* has a high tolerance towards salinity changes.
- Phytoplankton will only be effected by very high salinities.



Monitoring:

- Changes in the salinity of Kiel Fjord were not observed.



- A lot of work, sometimes boring routines...

but...

- "out of class" experience

- practical work, experiments

- insights into scientific work

- working in teams

- relaxed atmosphere at the institute

- decision for/against science career



- receiving practical support by scientists
- staying in contact to actual research:
 methods and backgrounds
- access to scientific equipment
- building a network with other teachers
- long term collaboration





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