PhysikClub

Students Research Centre

Understanding Physics by doing self-reliant and independent research
Learning is like exploring an undiscovered country...
Removing the blocks...
What teachers must not do!

- Solving all problems
- Dictating everything
- Controlling everything
- Feeling responsible for everything
- Deciding everything
- Planning everything
- Correcting everything
- Giving always instructions
- Writing down everything
- LEAF
- Fix
What teachers should do!

LETTING LOOSE

Scaffolding, coaching, advice, workspace, moderating, managing, observing, reflecting.
Knowledge can’t be absorbed or transferred, but must be constructed individually.

Learning is an active process with individual and collective aspects.

„Education is a self-organizing system, where learning is an emergent phenomenon“;
(Sugata Mitra, 2010)
• Cooperation between:
  – Albert-Schweitzer-Schule (ASS) Kassel (general secondary school)
  – City of Kassel, Hesse
  – Ministry of Education, Hesse
  – University of Kassel, Hesse
  – Ministry of Science, Hesse
• Research in all MINT-classes:
  – Physics/Astrophysics
  – Biology
  – Chemistry
  – Maths
  – Engineering
Staff

Head & Founder: Klaus-Peter Haupt
Staff: 20 collaborators:
• students
• teachers
• freelancers

Alumni-concept: Most students were formerly participating students in the PhysikClub
Internal structure and participants

- KidsClub: classes 5 - 6, age 10 - 11, tuesdays, 14:00-15:30
- JuniorClub: classes 7 – 8, age 12-13, fridays 13:45-15:15
- PhysikClub: classes 9 – 13, age 14 – 19, fridays 15:30-18:30
- Students come from different schools in northern Hesse
Principles

- No time-pressure
- No testing
- No grades
- Knowledge is a tool for solving problems
- Interdisciplinary work
- Competence-orientated
- Long-term researches
- Authentic projects
- Teamwork
Presentations

- Scientific presentations on Thursdays and Fridays
- Running presentations every Friday
- Annual presentations at the end of every school year
- Participation in national science fair („Jugend forscht“)
- Participation in several different fairs and exhibitions
- Students congress (2010: 1200 visitors)
• Annual workshops to one distinctive subject
  – Working groups
  – Lectures held by scientists
  – Presentations of the results
  – Excursions

• Examples:
  – Cave-exploration
  – Navigation
  – Mountains and stars
  – Cosmic sounds
Holiday-academy

- Academy for younger students (8-10) in the summer holidays
- Hands-on-experiments and smaller projects
- ~20 students
- Duration: one week
- Presentation and lunch the final day
Awards

Nat-Working Award
Robert-Bosch-Foundation

2. Platz: 2010
Sonderpreis: 2009

- 74 projects in the 1. round, including 30 projects for young students which end in the 1. round
- 32 projects in the 2. round
- 10 projects in the final round
- 3 winner of the national price in physics
Networking

- Institute of physics
- Institute of didactics
- Department of genetics
- Institute of engineering

• Didactics of Physics, University of Mainz
• Astronomical-Physical Cabinet, Kassel
• German Aerospace Centre, Cologne
• MPI Katlenburg-Lindau
• MPI Göttingen
• NAT-working program, Robert-Bosch-foundation
• AAK, Kassel
• Alfred-Wegener-Institut, Bremerhafen
2011-2012 an own building for the PhysikClub/SFN is built
900m² for research and education
observatory
Thank you for your attention!

Any Questions?