

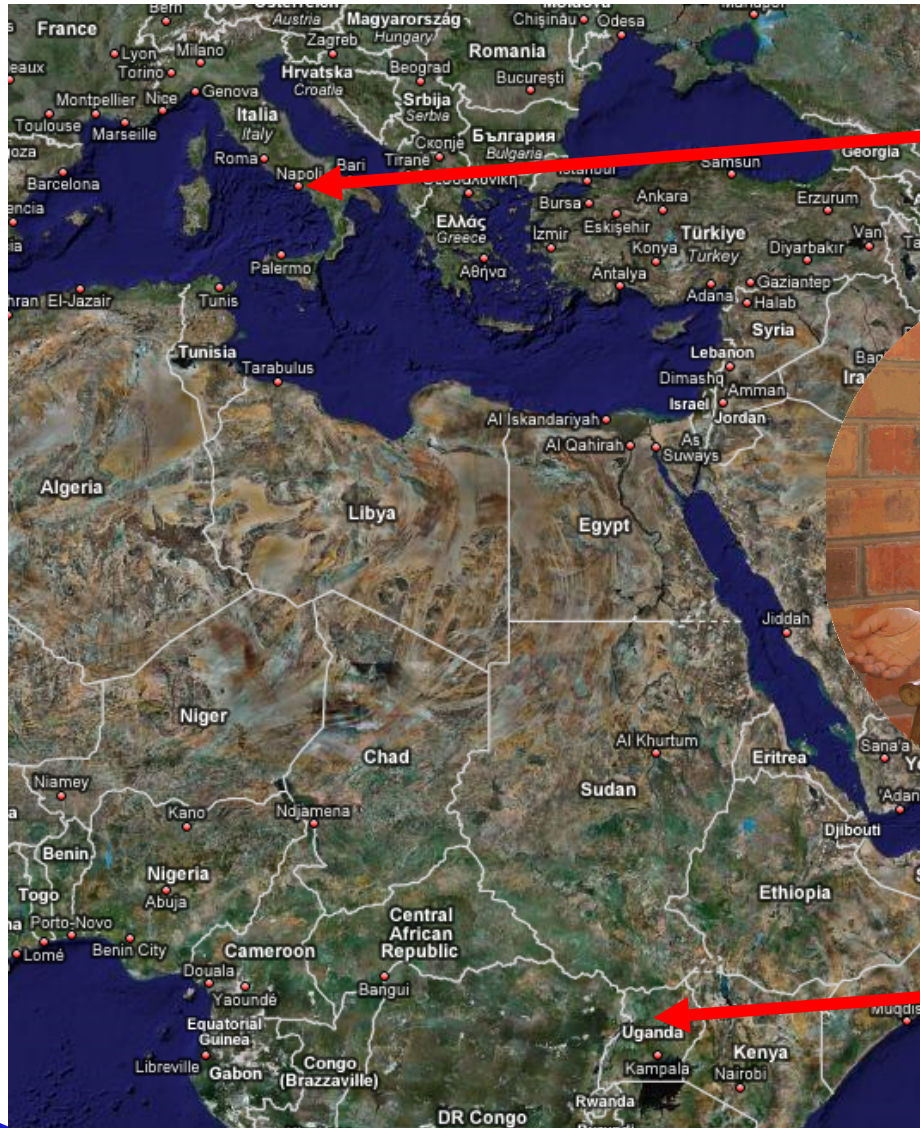
OP93-D

GULUNAP: a project for Teacher Education between north Uganda and Italy

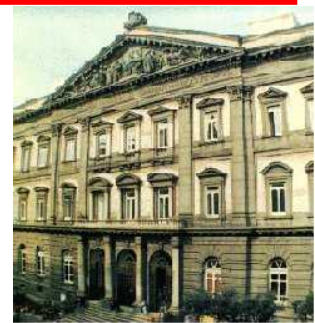
Elena Sassi, Luigi A. Smaldone

Università di Napoli Federico II (Italy)
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General Info



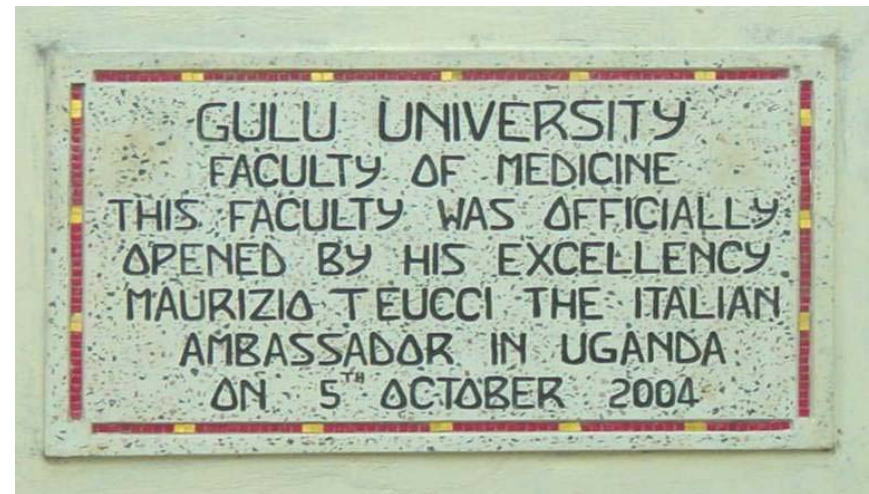
Napoli (south Italy)
Federico II Naples University
founded in 1224



Gulu (north Uganda)
Gulu University
founded in 2002

Starting of the GULUNAP Collaboration

2004: establishment of a Medicine Faculty in Gulu



Science Education Faculty Environment

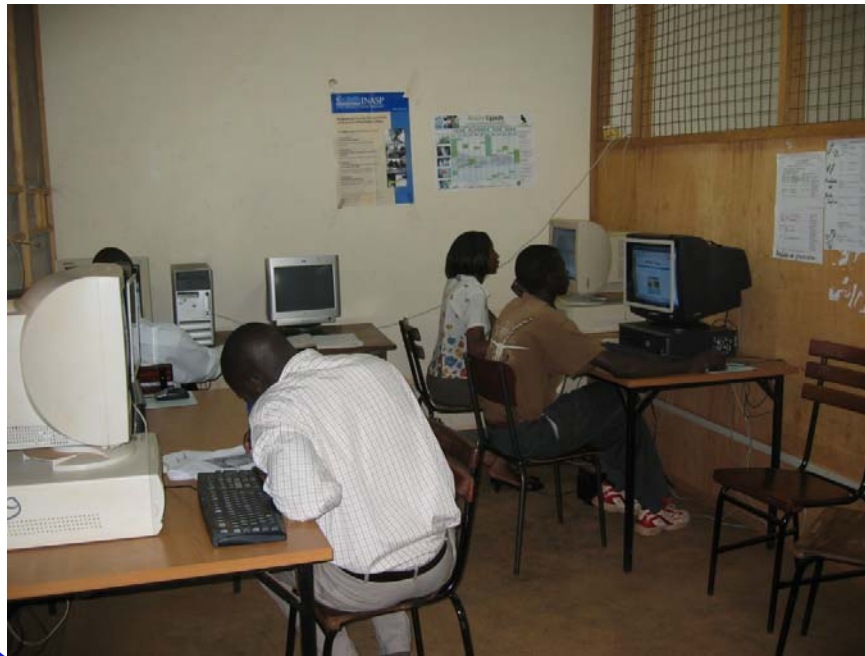


Public transports missing

Electric power very often off

Almost no ITC facilities

Library inadequate



Bachelor of Science Education (3 years)

for secondary school teachers-to-be

Curricula:

- Chemistry (80 stud.)
- Biology (60 stud.)
- **Physics (70 stud.)**



Staff:

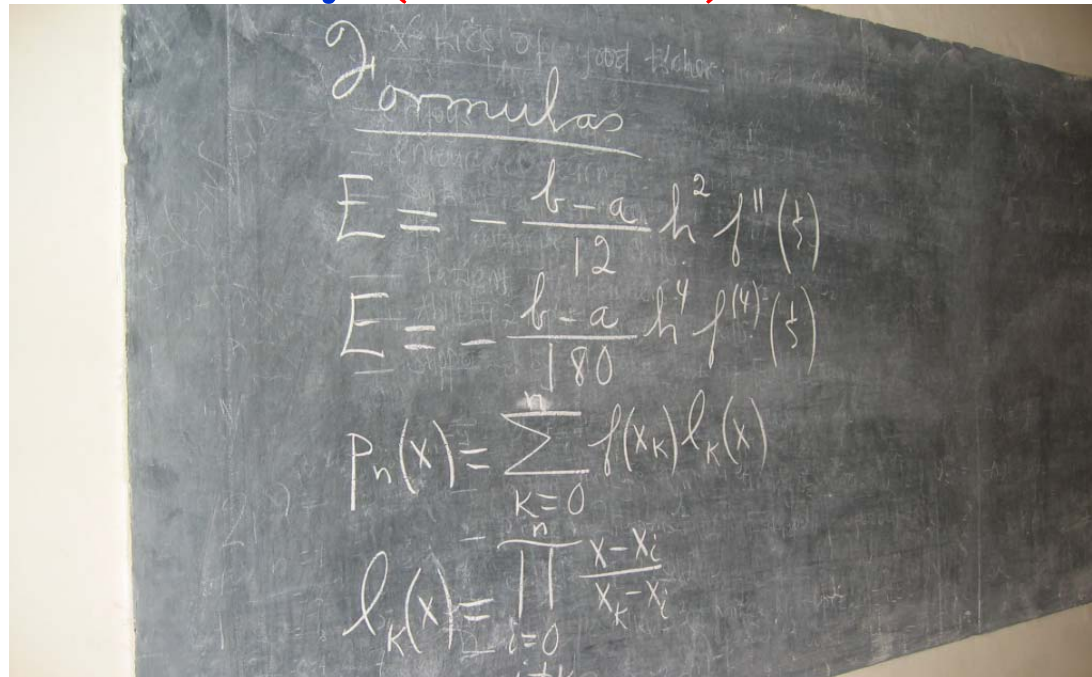
- 1 lecturer
- 4 teacher assistants
- 2 techn. assistants



Teaching/Learning Style



- students **personal notes** (often dictation)
- no or very old books
- few or **no student's questions**
- lab work step by step (traditional apparatuses, if any)
- **mnemonic study (formulas)**



Guidelines for Collaboration with Science Education Fac.

Two levels:

teachers-to-be (BSE students) and
in-service teachers (in north Uganda secondary schools)

BSE (teachers-to-be):

- curricula review
- laboratories set-up
- **staff training**
- Science Education Research **tools and procedures**



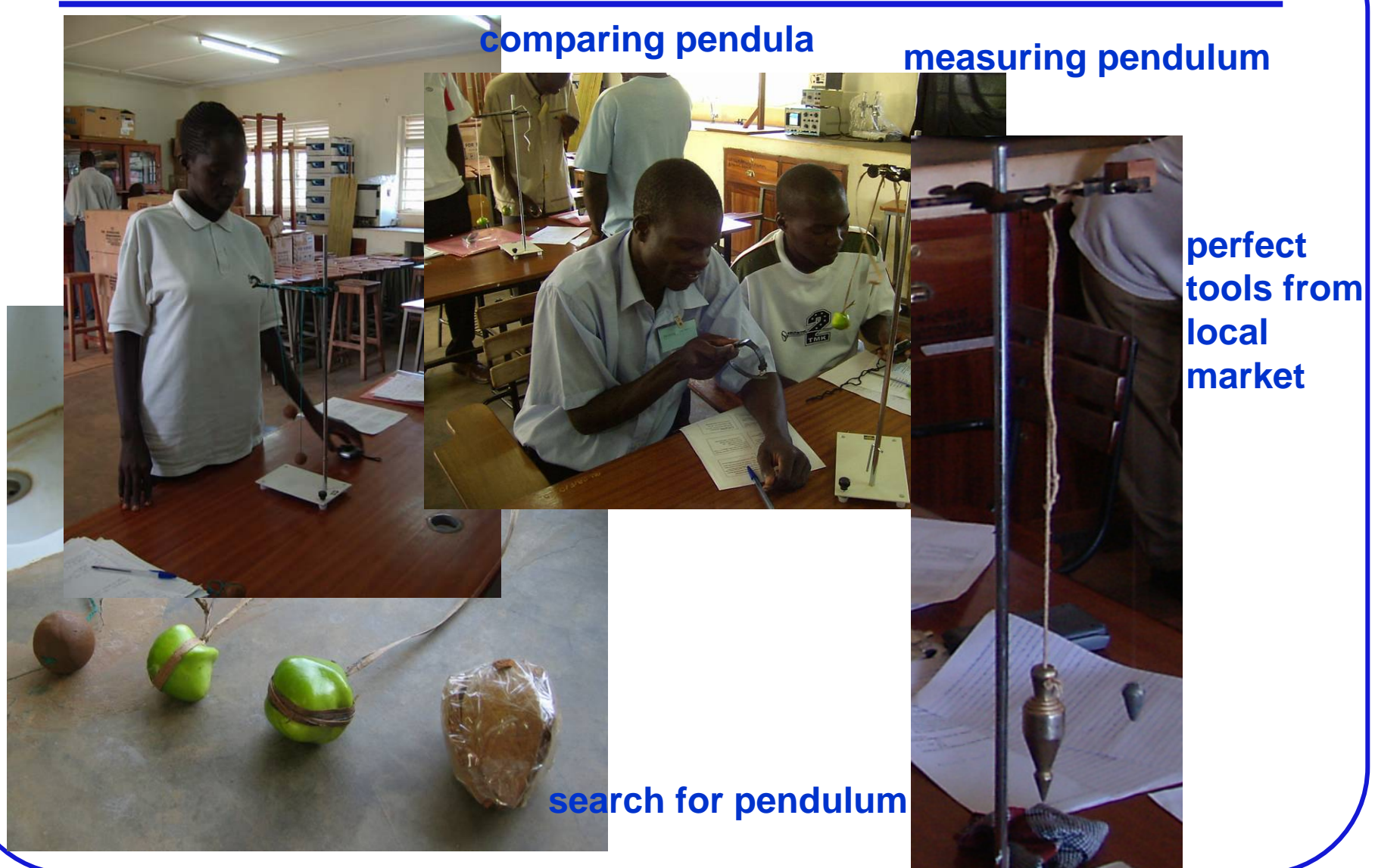
Collaboration Rationale

First Interventions: Spring and Fall 2006

- full immersion, 6 weeks activities
- integrated lecture + lab-work
- PER results + peer learning
- from memorization to active participation
- critical thinking
- do-it-yourself lab equipment



Emblematic Example 1



Emblematic Example 2

from the waste basket to the experiments

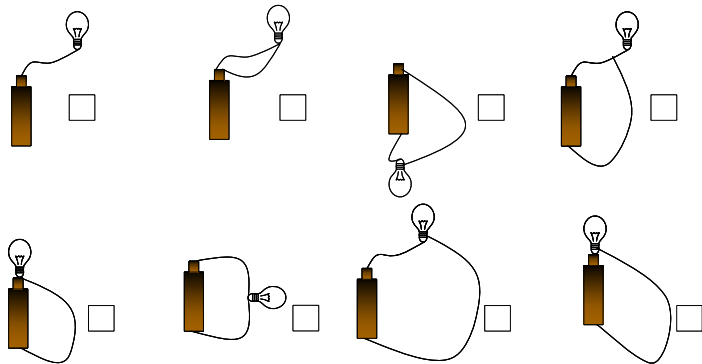


sinking & floating (local soft woods and nails)

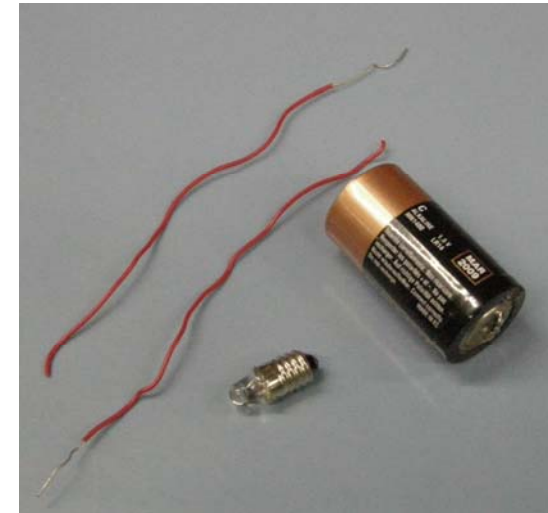


Emblematic Example 3

Which circuit(s) will light the bulb?

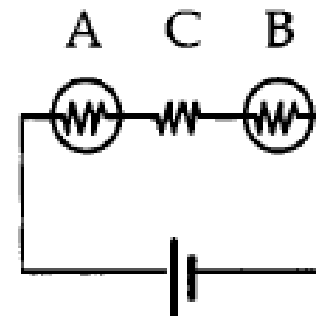


questionnaires
&
experiments
(PEC cycle)



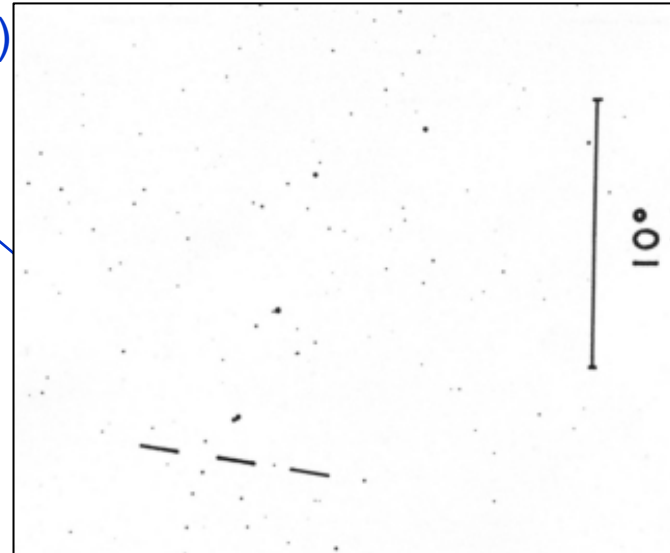
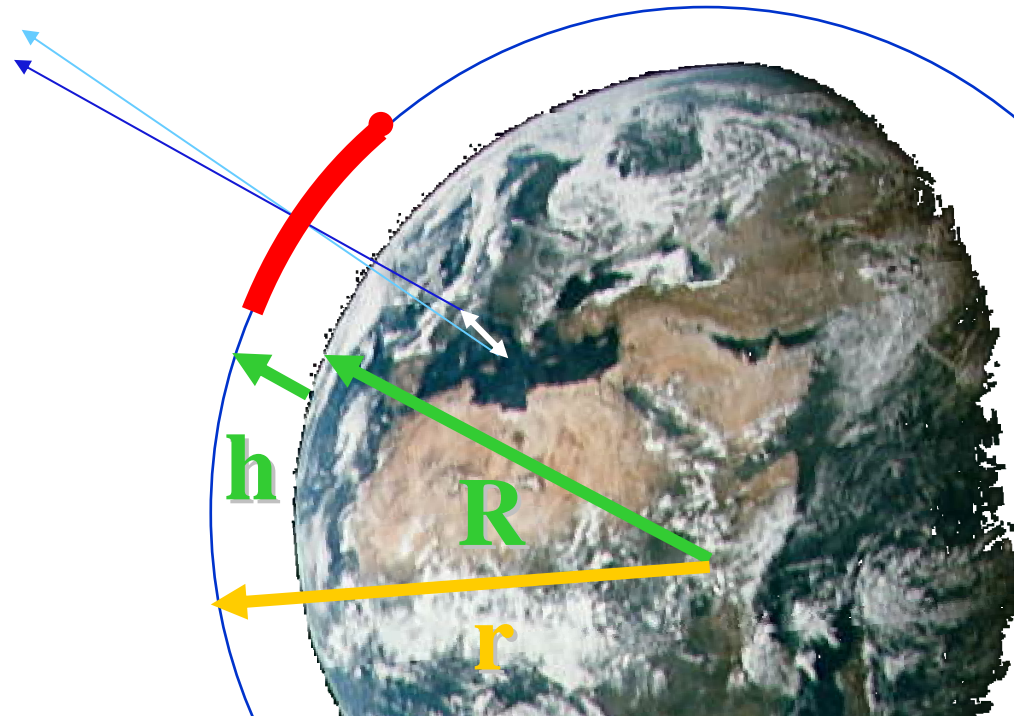
If you increase the resistance C, what happens to the brightness of bulbs A and B?

- (A) A stays the same, B dims
- (B) A dims, B stays the same
- (C) A and B increase
- (D) A and B decrease
- (E) A and B remain the same

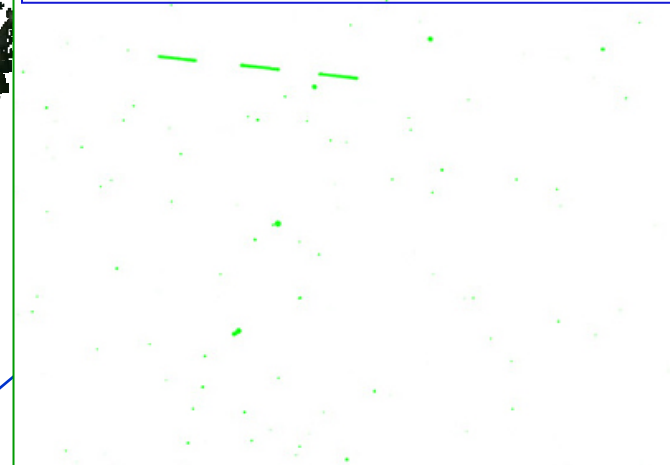


Emblematic Example 4

long exposure satellite photos (from 2 diff. sites)
(borrowing physics from astronomy or v.v.)



paper, pencil and ruler exp.



$$r^3 = \frac{G}{4\pi^2} M_{Earth} T^2$$

Results on Teaching/Learning Style

- **portfolio** (including research based questionnaires) as main material (also for assessment of courseware)
- critical analysis of common **learning difficulties**
- **local low cost** or no cost as lab materials or recycling of used materials
- “**mango tree**” question time



In-service Teachers

Internally Displaced People → Internally Displaced Schools



Science Education Faculty
Gulu University
Uganda

Facoltà di Scienze MFN
Università di Napoli Federico II
Italy

Northern Uganda Teachers of Science
1st N.U.T.S. Workshop

**Every Day
Physics Practicals
with
Every Day Materials**

11th - 16th December 2006
Main Campus, Gulu University

The workshop is reserved to 45 Physics Teachers in service in Northern Uganda secondary schools. Transport and Full board accommodation will be provided by the workshop organisers.

Organising Committee :
E. Sassi - L.A. Smaldone
D. Katongole - V.S. Mambo - B.J. Zziwa

Graphics: L.A. Smaldone

- secondary schools on average **without resources**
- in-service teachers often **not qualified**
- **portfolio**
- **local low cost lab materials**
- **equipment to take back** to school, easy to reproduce
- do it **yourself** sheets

N.U.T.S. Workshop Example: Telemeters



Future Development

GULUNAP has been renewed 2007-2010
(Medicine, Science and Agriculture Faculties)

Support to **Bachelor of Science Education:**

Biology

Chemistry

Physics