



*Some experience in experiential
learning activities*

Teaching and Learning Workshop of Chemistry

Nov 1, 2013

Chu Ming-chung 朱明中

Department of Physics

CUHK

Weaknesses of a typical Physics student at CUHK

- *Examination oriented - learning distorted by exams, self-image built on grades, passive*
- *Lack of confidence/initiatives/motivation to become independent learner*
- *Poor in communication and collaboration skills*

What to do??



Experiential learning

*Extracurricular Learning Opportunities:
SURE, OPUS, STAR, ...*

Original motivations:

- *1. students learn better by applying what they have learnt*
- *2. shift their focus from exams/grades to real applications*
- *3. put students in a new environment to induce reflections and positive changes*
- *4. train students to be more communicative and collaborative*
- *5. to cultivate a research culture*
- *6. to cultivate a proactive and creative spirit*

<http://www.phy.cuhk.edu.hk/internship/>

Research & Internship

- encourage students to take up research projects and/or internship, eg.:
Overseas Program for Undergraduate Students (*OPUS*), Summer Undergraduate Research Exchange (*SURE*), Summer Teacher Apprenticeship (*STAR*), Special projects, internship opportunities (HKO, Space Museum, etc.)

www.phy.cuhk.edu.hk/internship



STAR ↑ Sze Wing Chun working at a secondary school

← SURE Ben Lau at Caltech

Summer Undergraduate Research Exchange

www.phy.cuhk.edu.hk/sure

Since 2000

Selected students take up summer research projects in leading groups abroad, with financial support from the dept. Eg.: planetary science (Caltech) 、 CERN experiments, dark energy survey (UIUC) 、 nuclear physics (MSU/NSCL, UIUC) 、 biophysics (Brown) 、 ...

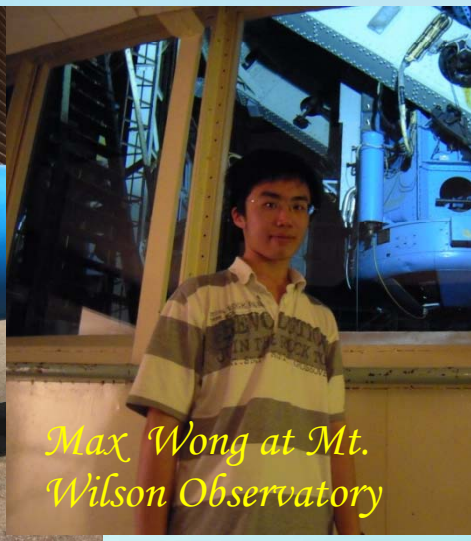
Oct 2013: 80 have completed the program

59 have continued on to graduate study; 40 admitted to PhD programs

Published: 3 PRLs, 2 Phys. Lett. B, 1 Geophys. Res. Lett., 3 PRCs, 1 Global Biogeochem. Cycles



Tam Chun Nam and Li Tsun Yin at CERN



Max Wong at Mt. Wilson Observatory



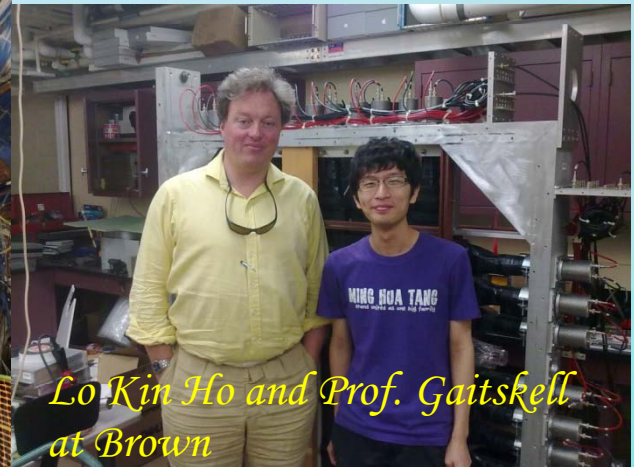
SURE students at Caltech

Summer Undergraduate Research Exchange

- Announce projects (~10) in Sept.
- Application through late Dec. (basic info. + 1 200-word essay)
- Shortlist based on major GPA (10-15)
- Interviewed by a panel of 6 teachers in January; ~ 6 students/yr. selected
- Training: Jan-May; research abroad: June-August
- Returning students: Oral report: Sept.; written report: Dec.



*Terry Chan and Michael Tam
at CERN*



*Lo Kin Ho and Prof. Gaitskell
at Brown*

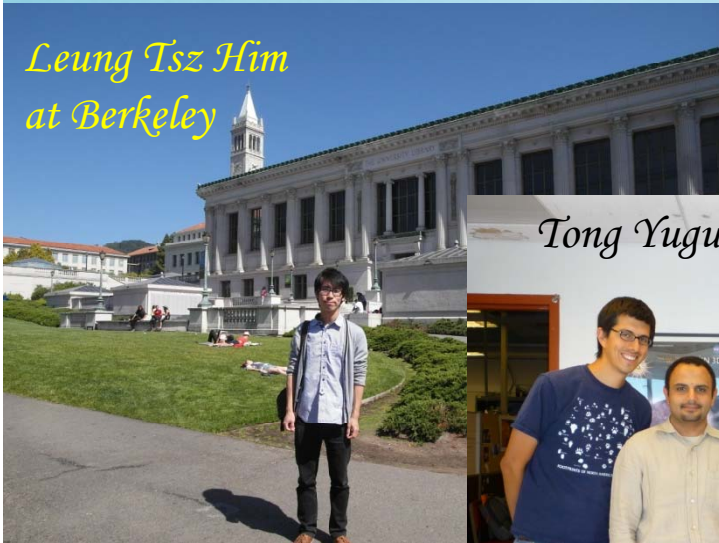
Overseas Program for Undergraduate Students

www.phy.cuhk.edu.hk/opus

Since 2006

Dept. sponsors 4 – 8 students each year to take up 1 semester of exchange and 1 summer research at U. C. Berkeley, Fudan Univ., and Peking Univ.

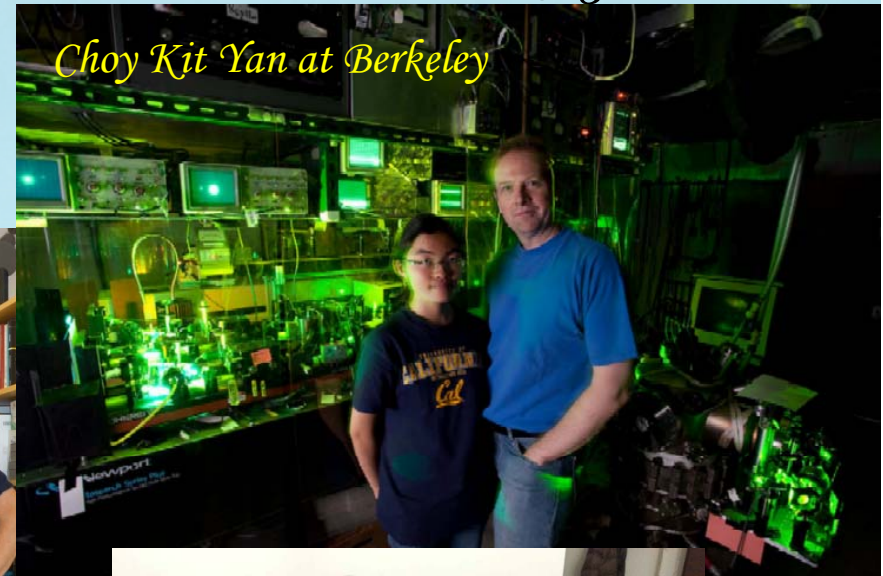
*Leung Tsz Him
at Berkeley*



Tong Yuguang at LBNL



Choy Kit Yan at Berkeley



*Oct 2013: 31 have completed the program
22 have continued on to graduate study;
16 for PhD*

Matthew Huang at LBNL



Overseas Program for Undergraduate Students

- Application through OAL (Oct)
- Shortlist based on major GPA (10-15)
- Interviewed by a panel of 6 teachers in January; 4 students/yr. selected
- Regular exchange: Jan – May; summer research: June-August
- Returning students: Oral report: Sept.; written report: Dec.

Map of alumni overseas: <http://maps.google.com/maps/ms?ie=UTF&msa=0&msid=111514872469039539967.00044a2dd8eae8cd1d386>



*Matthew Huang, Albert Law,
and Jonathan Ma at Berkeley*



Anna Wong at Berkeley

Summer Teacher AppRenticeship

www.phy.cuhk.edu.hk/star

Since 2002

Dept. sponsors 5-10 each summer to work in local secondary schools as teaching assistants



Lai Yik Man with students



Tommy Wong teaching



Sze Wing Chun tutoring students



Lee Wai Tak with students

Oct 2013: - 93 have completed the program

- 29 have continued on to graduate study, 7 for PhD

- 30 have become teachers

Summer Teacher AppRenticeship

- Application Jan-Feb
- Interviewed by a panel of ~6 secondary school teachers in Feb/March;
~7 students/yr. selected
- training: March – May; Internship: May -August
- Returning students: Experience sharing/reflection: Jan/Feb



Anna Cheng and students

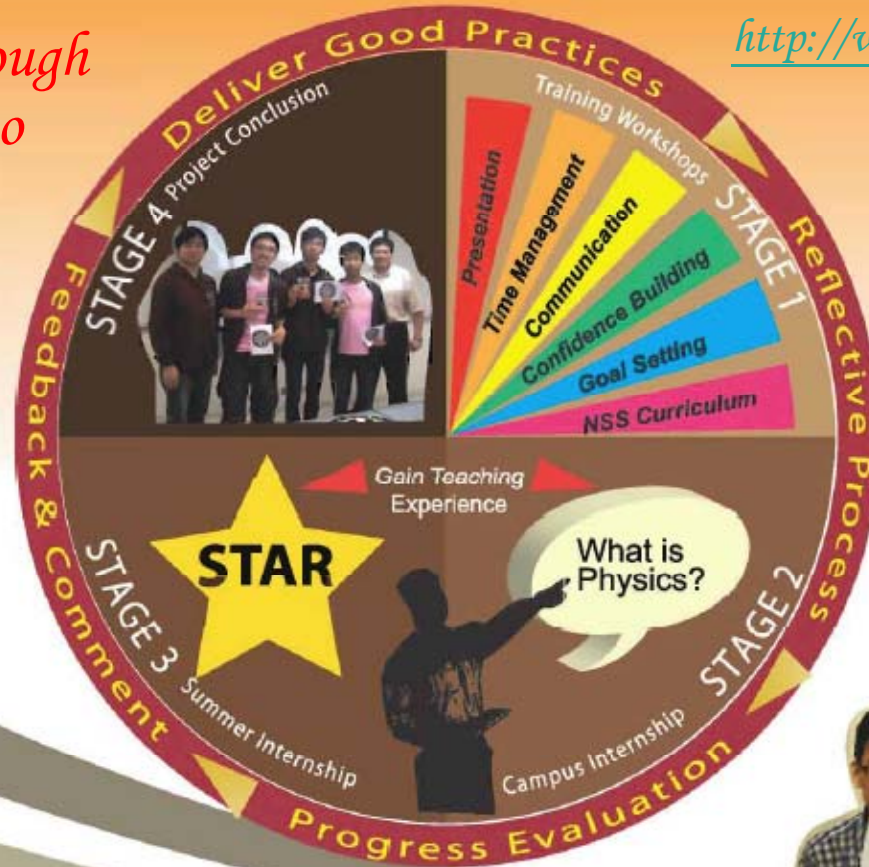


Tang Wai Ho and students

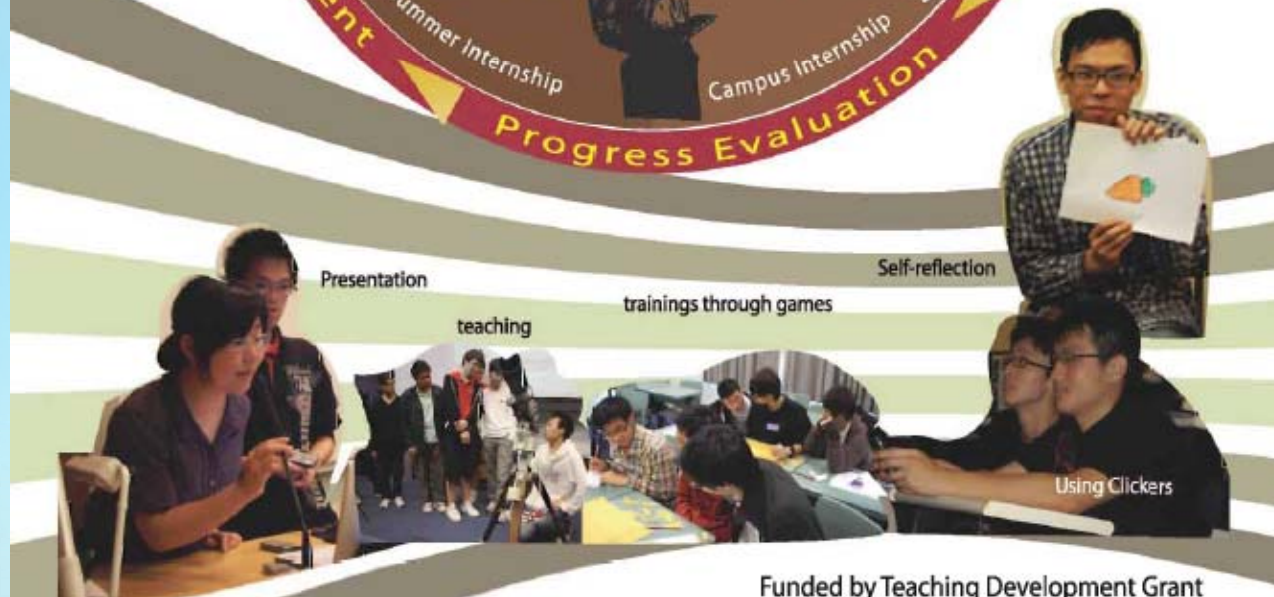
Learning through Teaching

Perhaps the most thorough learning experience is to TEACH!

<http://www.phy.cuhk.edu.hk/tdg/>

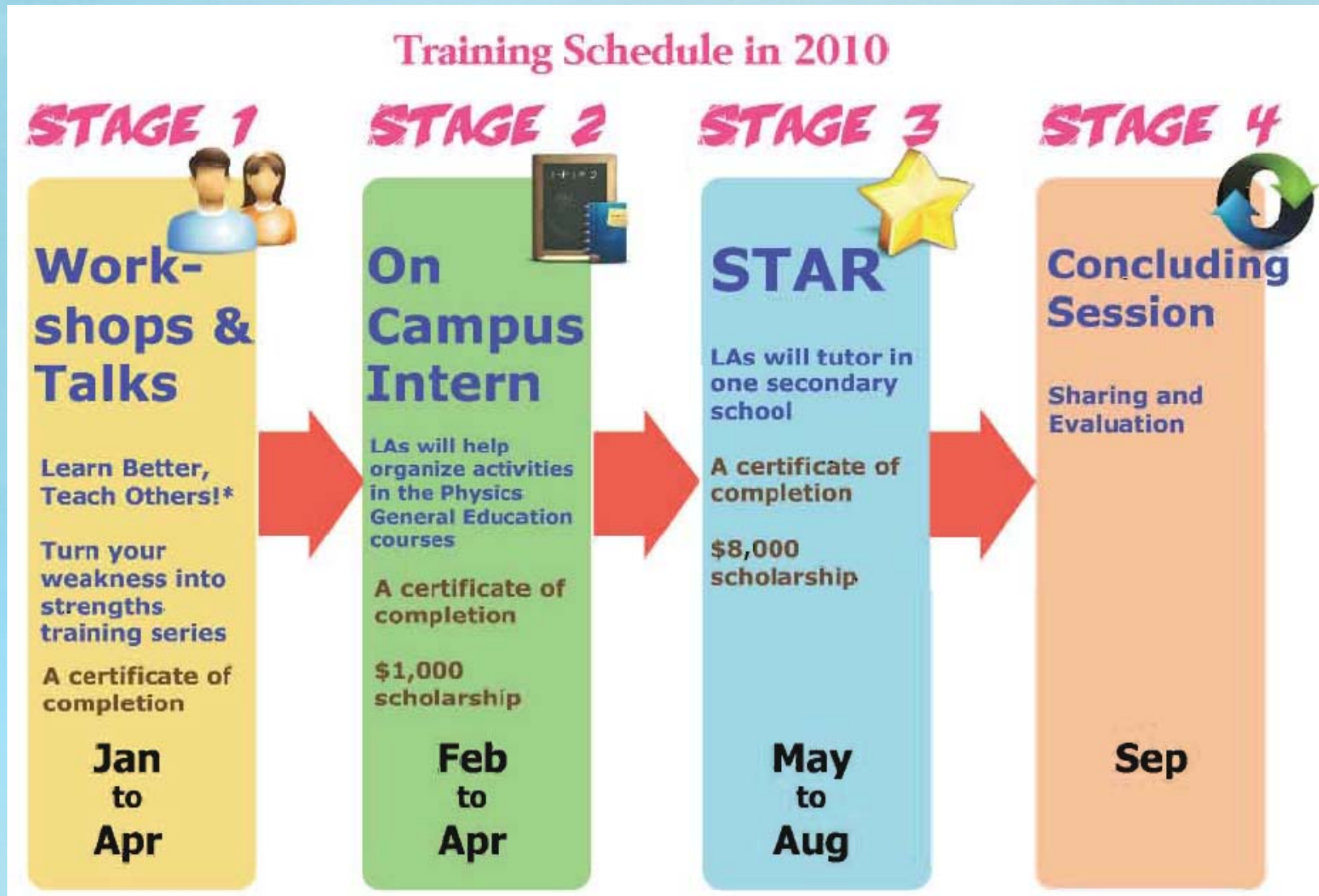


Funded by TDG 09-11, 12-13



Funded by Teaching Development Grant

Learning through Teaching



Learning through Teaching

| | Date | Time | Topics | Speaker/ Trainer |
|------------------------------------------------------------|--------------|-------------|-----------------------------------------|-------------------------------------------------------------------------|
| Activity One: Talk | 18 Jan (Mon) | 4:30-6pm | Learn Better? Teach Others! | Ms Anna Lee, Education Bureau, HKSAR |
| Activity Two: 'Turn Your Weaknesses into Strengths' Series | 25 Jan (Mon) | 4:30-6:30pm | Manage Your Time | Mr Simon Ho, CLEAR, CUHK Sharing: Dr WH Siu, SKH St Benedicts School |
| | 25 Feb (Thu) | 4:30-6pm | Present Yourself to Your Best Advantage | Mr Simon Ho, CLEAR, CUHK |
| | 4 Mar (Thu) | 6:30-8:30pm | Take Your Power-Confidence Building | Ms Grace Wong, OSA, CUHK |
| | 9 Mar (Tue) | 4:30-6:30pm | Do Communicate | Ms Eunice Yip, OSA, CUHK |
| | 25 Feb (Thu) | 4:30-6pm | Set Off Your Better Life | Mr Simon Ho, CLEAR, CUHK |

Stage 1: talks and workshops



Learning through Teaching

Stage 2: On-campus internship

| Date | Time | Content |
|-----------------|----------------|--------------------------|
| 1 April (Thur) | 7-10pm | Star-gazing I |
| 8 April (Thur) | 7-10pm | Star-gazing II |
| 9 April (Thur) | 2-5pm | Visit to Science Museum |
| 17 April (Thur) | 9:30am-12:30pm | Visit to Space Museum |
| 19-23 April | 2-4:15pm | Quiz Game using Clickers |



Learning through Teaching

Stage 3: Off-campus internship: STAR

Schedule and Participating Schools & Organization:

| Schools / Organization | Teachers / Supervisor |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| C&MA Sun Kei Secondary School 基督教宣道會宣基中學 (http://www.skss.edu.hk/) | Mr. Ho Chun-yan 何俊恩老師 |
| Lui Cheung Kwong Lutheran College 路德會呂祥光中學 (http://www.lck.edu.hk/) | Mr. Fong Cheuk-yu 方卓如老師 |
| SKH Lam Woo Memorial Secondary School 聖公會林護紀念中學 (http://www.lamwoo.edu.hk/) | Mr. Cheng Hong-yung 鄭航勇老師 |
| SKH Li Ping Secondary School 聖公會李炳中學 (http://skhlp.school.net.hk/) | Mr. Chan Fu-shing 陳輔成老師 |
| SKH St. Benedicts School 聖公會聖本德中學 (http://www.skhsbs.edu.hk/) | Dr. Siu Wing-hon 蕭榮漢老師 |
| Hong Kong Space Museum 香港太空館 (www.lcsd.gov.hk/CE/Museum/SPACE/) | Mr. CHAN Ki Hung, Curator of the Museum |



Learning through Teaching

Stage 4: Reflection and Evaluation

For the project team:

1. To gain an understanding of program operation;
2. To document program effectiveness;
3. Examine strengths and weaknesses of program;

For participants:

1. To identify ways to think about their skills and the areas they want to develop;
2. To reflect on their learning style and strategies so as to enhance and improve their learning in the future.

- 2 focus-group evaluations conducted by CLEAR
- 1 closing seminar: experience sharing by participants



Local Internship

http://www.phy.cuhk.edu.hk/intern/notice_2008.pdf

Since 2005

Placement at Hong Kong Observatory: summer or full-year



*Oct 2013: - 28 have completed the program, 2 continuing
- 19 have continued on to graduate study, 8 for PhD*



Some reflections

Original motivations:

- 1. *students learn better by applying what they have learnt*
- 2. *shift their focus from exams/grades to real applications*
- 3. *put students in a new environment to induce reflections and positive changes*
- 4. *train students to be more communicative and collaborative*
- 5. *to cultivate an academic culture*
- 6. *to cultivate a proactive and creative spirit*

How are we doing?

- 1. *attracted motivated students*
- 2. *many more students attempt exchange/alternative programs*
- 3. *many more students discuss career plan with me*
- 4. *some changes in culture (more research oriented, more outgoing, broadened perspective)*
- 5. *But students are more dependent on these programs*
- 6. *How to strike a balance?*



New ideas this year

CU Physics Outreach Team (CUPOT)

- 1. science outreach activities in secondary schools eg. stargazing night at Zheng Sheng College (Dec 13?)*
- 2. Production of science videos: short videos on selected science topics (eg. black hole, God particle, common misconceptions, ...)*



*Some experience in experiential
learning activities*

Teaching and Learning Workshop of Chemistry

Nov 1, 2013

Chu Ming-chung 朱明中

Department of Physics

CUHK