

# Teaching Development Grant Projects: Brief report and Sharing

Dr Man Yiu Kwong & Mr Ng Wing Shui

Departmental Retreat  
(20 Dec 2012)



The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.

# Developing exploratory pedagogy to enhance teaching and learning of mathematics (Jan 2010– June 2011)

|                               | Name                                                                                                                                                                          |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Principal Project Supervisor: | Dr MAN Yiu Kwong                                                                                                                                                              |
| Co-supervisor(s):             | Dr POON Kin Keung<br>Dr CHEUNG Ka Luen<br>Dr LEUNG King Shun<br>Dr LEUNG Yuk Lun, Allen<br>Dr CHENG Hiu Fai, Kell<br>Dr CHOW Chak On<br>Dr FUNG Chun Ip<br>Dr KONG Siu Cheung |
| Budget:                       | \$151,318                                                                                                                                                                     |

# Objectives

- ▶ To develop exploratory pedagogy for enhancing teaching and learning of mathematics
- ▶ To design and develop relevant exploratory teaching and learning materials for use by lecturers and students
- ▶ To study the impact of the end-products

# Working Groups

- ▶ Calculus (MTH1098): Dr Eric Poon ; Dr Man
- ▶ Introduction to Analysis (MTH2099): Dr Kell Cheng;  
Dr Allen Leung
- ▶ Essential Mathematical Concepts (MTH1110):  
Dr KS Leung; Dr Cheung
- ▶ The other members contributed to provide comments on  
the working groups.

# Deliverables

- ▶ Departmental seminars (Nov 2010; May 2011)
- ▶ Presentations at the HKMEC Conference 2011 held at CUHK in June 2011
- ▶ Proceedings of the HKMEC Conference 2011
- ▶ Refereed Journal articles
- ▶ Online resources
  - [http://www.math.ied.edu.hk/tdg2010\\_11/](http://www.math.ied.edu.hk/tdg2010_11/)

# Calculus

- ▶ Exploratory learning activities  
(e.g.  $\sin(x)/x$  &  $\tan(x)/x$  as  $x \rightarrow 0$ ; Riemann sum)
- ▶ pretest & posttest
- ▶ Lesson observation
- ▶ Questionnaire
- ▶ Notes, Exercises
- ▶ e-Learning Resources
  - Visual Calculus  
<http://archives.math.utk.edu/visual.calculus/>
  - e-Calculus  
<http://www.math.uakron.edu/~dpstory/e-calculus.html>
- ▶ A paper submitted to a refereed journal

# Introduction to Analysis

- An applet for studying the definition of the limit of a sequence
  - Worksheets
  - [http://www.math.ied.edu.hk/tdg2010\\_11/geogebra/2011/limit.html](http://www.math.ied.edu.hk/tdg2010_11/geogebra/2011/limit.html)
  - Other related online resources
- ▶ Notes, Exercises
- ▶ Interviews
- ▶ pretest; posttest
- ▶ Presentation at the HKMEC conference 2011

# Essential Mathematical Concepts

- ▶ An applet for online revision (set theory)
- ▶ questionnaire
- ▶ mathematical induction (pretest; posttest)
- ▶ Exploratory worksheet for learning M.I.
- ▶ e-learning Resources  
<http://csm01.csu.edu.tw/0166/Math2/41.htm>
- ▶ Presentations at the HKMEC 2011 and departmental seminar



# Enhancing the relationship between teaching and learning of mathematics and information technology courses (mid-June 2011 – June 2012)

|                               | Name                                                                                     |
|-------------------------------|------------------------------------------------------------------------------------------|
| Principal Project Supervisor: | Dr MAN Yiu Kwong<br>Dr HO Kwok Pun<br>Dr KONG Siu Cheung                                 |
| Co-supervisor(s):             | Dr NG Mee Wah, Eugenia<br>Dr POON Kin Keung<br>Dr CHENG Hiu Fai, Kell<br>Mr NG Wing Shui |
| Budget:                       | \$158,772                                                                                |

# Project objectives

- ▶ To enhance the relationship between teaching and learning of subject courses with concrete examples
- ▶ To develop pedagogy and related teaching and learning materials in mathematics and information technology courses suitable for online learning or e-learning
- ▶ To integrate the end-products of this project to become part of the departmental teaching portfolio

# Planned deliverables

- ▶ Online teaching or e-learning materials for use in mathematics or information technology courses
- ▶ A preliminary version of a departmental teaching portfolio.
- ▶ Dissemination of our experience and findings via seminars or academic refereed journals.

# Topics involved

| Supervisor         | Course                                              | Topic                                                                                   |
|--------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------|
| Dr Kong Siu Cheung | Teaching Information Technology for Primary Classes | Flash Animation Production                                                              |
| Dr Man Yiu Kwong   | Geometry and Measurements                           | Cavalieri Principle                                                                     |
| Dr Ho Kwok Pun     | Plane Geometry                                      | Geometric Construction                                                                  |
| Dr Ng Mee Wah      | Introduction to Programming and Problem Solving     | Control Flow                                                                            |
| Dr Poon Kin Keung  | Elementary Number Theory                            | Modular arithmetic                                                                      |
| Dr Cheng Hiu Fai   | Introduction to Analysis                            | The Concept of Limit                                                                    |
| Mr Ng Wing Shui    | Introduction to Programming and Problem Solving     | The Exploitation of Assessment for Learning Strategies in Teaching Computer Programming |

# Geometry and Measurements

- ▶ Animations created by using GeoGebra
  - [http://www.math.ied.edu.hk/tdg2010\\_11/2011/cavalieri/cavalieri.html](http://www.math.ied.edu.hk/tdg2010_11/2011/cavalieri/cavalieri.html) (volume of sphere)
  - [http://www.math.ied.edu.hk/tdg2010\\_11/2011/cavalieri/part1&2.html](http://www.math.ied.edu.hk/tdg2010_11/2011/cavalieri/part1&2.html) (volume of pyramid)
- ▶ Online Exercises (e.g. T/F; multiple choices; fill-in the blanks)
  - [http://www.math.ied.edu.hk/tdg2010\\_11/2011/cavalieri/exercise.html](http://www.math.ied.edu.hk/tdg2010_11/2011/cavalieri/exercise.html)
  - [http://www.math.ied.edu.hk/tdg2010\\_11/2011/cavalieri/prism\\_1.html](http://www.math.ied.edu.hk/tdg2010_11/2011/cavalieri/prism_1.html)



Questionnaire

For private study or research only.  
Not for publication or further reproduction.

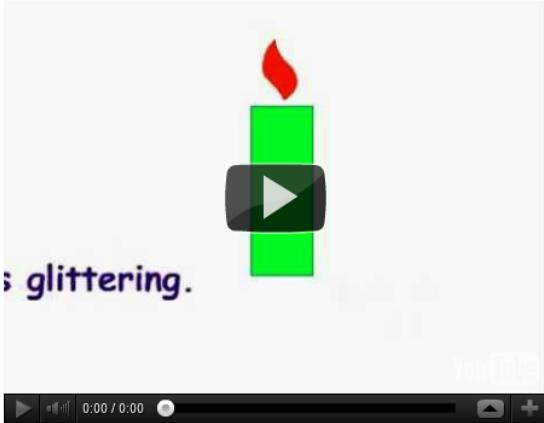
# Teaching Information Technology for Primary Classes

- ▶ Flash notes and exercises can be viewed with different view on Mahara

**FLASH 動畫製作**

This version is to be viewed by the public

[完成作品](#)



[教案及工作紙範例](#)

- [FlashLess...her.docx](#)  
23.3KB | Friday, 11 November 2011 | [Details](#)
- [FlashWSteacher.docx](#)  
905KB | Friday, 11 November 2011 | [Details](#)

[完成品動畫檔](#)

- [candle.swf](#)  
3.2KB | Wednesday, 02 November 2011 | [Details](#)

**Creative Commons License**

 This work is licensed under a [Creative Commons Attribution-Share Alike 3.0 Unported License](#).

[Feedback](#)

0 comments

[Place feedback](#) | [Report objectionable material](#) | [Print](#) | [Add View to watchlist](#) | [Info](#)

# Introduction to Programming and Problem Solving

- ▶ Programming Exercise focusing on
  - Common Programming Errors
  - Good Programming Practices
- ▶ Test & Questionnaire on different approaches:
  - Group work
  - Individual

# Introduction to Programming and Problem Solving

## ► Online Resources

- Youtube videos recorded
- Online e-learning resources

|                     | Videos                                                                                                                                                                                                                                                                                                                                                 | With Oral explanation?<br>(English) | <a href="#">如意網站VB教學網</a>                                                                                | <a href="#">Visual Basic 6.0 教學目錄</a>                                                                         |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Ch 7                |                                                                                                                                                                                                                                                                                                                                                        |                                     |                                                                                                          |                                                                                                               |
| I. 次程式 (Subprogram) | <i>How to create function(1:21)</i><br><a href="http://www.youtube.com/watch?v=KfF3HxnzbMc&amp;feature=related">http://www.youtube.com/watch?v=KfF3HxnzbMc&amp;feature=related</a><br>- simple sum function (0:10~1:15)                                                                                                                                | No                                  | <br>如意網站VB教學網 ch7.doc | <br>教學目錄 ch7.doc           |
| II. 宣告變數資料型態        | <i>Writing a Function – advanced (9:20)</i><br><a href="http://www.youtube.com/watch?v=F0hv9zOhblg">http://www.youtube.com/watch?v=F0hv9zOhblg</a><br>- encrypt the text by changing it to ANSI code with <b>function created</b> . For() loop, Len(), Mid(), Asc(), etc. (2:03~7:10)<br>- write the code in main body and run the program (7:15~8:08) | No                                  | 副程式<br>→ Sub陳述式<br>→ Function陳述式<br><br>基本操作<br>→ 關於變數<br>→ 瞭解變數的範圍 (Private/ Public)<br>                | B4 函數與副程式<br>➢ 副程式的格式與類型 slide #4-6<br>➢ 建立副程式 slide #7-10<br>➢ 呼叫副程式 slide #11-13<br>➢ 參數傳遞與傳回值 slide #14-21 |



## ► Online Assessment Form for peer-evaluation



# Thank you !!



The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.