香港教育學院
課程與教學學系
林智中

今天題目：

未來學教新契機

重點：未來

季羨林 (2000)

“未來帶來希望”

但是

季老在這句話之前加了兩句

“過去帶來惆悵

現在帶來迷惘”

- 建議將來的發展，必須回顧過去及現況

- 特別是：

現處於教改交叉點

- 課程發展處：陳嘉琪博士　於2008年2月10日發表了一篇短文：

- 題目：

  課程改革：建基優勢，持續深化

- 文中的第一個副題是：

成果豐碩，教師貢獻良多

當中包括以下一段文字：

成果豐碩，教師貢獻良多

「過去一年可說是校長和老師們的豐收年，我們的學生經過了多年的努力砥礪，在一些國際性的評估計劃中表現卓越，畫出了一道一道的彩虹。我們透過委託大專院校逐年所作各層面的調查研究，印證到課程改革五年以來，不論是學生的學習動機與表現，或是教師在學與教中的方法和角色，都不斷進步。」

- 課程改革：推行了八年

- 比香港推行課程改革較早的地區

  -台灣

  -日本

  都出現了不少問題

台灣：

- 早於2003年，一大群學者發起

「終結教改亂象　追求優質教育」

——全民聯署行動

雖然未能迫使政府放棄課改，但已作出調整。

日本：

- 也已作出調整
- 最近宣布新的課程改革，
  糾正世紀之交的改革措施，
  增加教學內容的比重

香港：

狀況似乎比較好

起碼在 PISA 2006中，整體狀況是不錯的

還有 Policy Exchange 的

Helping Schools Succeed: Lessons from Abroad

都提出香港教育制度上的成功

但是反映課改成功嗎？

未能下定論：

在 PISA 2000
香港學生的表現已經非常突出

PISA 2003, 2006：並未有超越 PISA 2000的表現

在 PISA 2000受試的學生，根本未經過教改洗禮

按理：經過母語教學及課改後，學生的表現應比 2000年更好

當然，在一些環節上有明顯的改進，特別是**閱讀**。

PIRLS

Rank	PISA 2000[17]	PIRLS 2001[18]	PISA 2003[19]	TIMSS 2003 Maths (Grade 8)[22]	TIMSS 2003 Science (Grade 8)[23]	PISA 2006[20]	PIRLS 2006[21]
1	Finland	Sweden	HK-China	Singapore	Singapore	Finland	Russian Federation
2	Canada	Netherlands	Finland	Korea	Chinese Taipei	HK-China	HK-China
3	New Zealand	England	Korea	HK-China	Korea	Canada	Alberta (Canada)
4	Australia	Bulgaria	Netherlands	Chinese Taipei	HK-China	Chinese Taipei	Singapore
5	Ireland	Latvia	Liechtenstein	Japan	Estonia	Estonia	British Columbia (Canada)
6	Korea	Lithuania	Japan	Belgium (Flemish)	Japan	Japan	Luxembourg
7	United Kingdom	Hungary	Canada	Netherlands	England	New Zealand	Ontario (Canada)
8	Japan	United States	Belgium (Flemish)	Estonia	Hungary	Australia	Italy
9	Sweden	Italy	Macao-China	Hungary	Netherlands	Netherlands	Hungary
10	Austria	Germany	Switzerland	Malaysia	USA	Liechten-stein	Sweden
11	Belgium	Czech Republic	Australia	Latvia	Australia	Korea	Germany
12	Iceland	New Zealand	New Zealand	Russian Federation	Sweden	Slovenia	Netherlands
13	Norway	Scotland	Czech Republic	Slovak Republic	Slovenia	Germany	Belgium (Flemish)
14	France	Singapore	Ireland	Australia	New Zealand	United Kingdom	Bulgaria
15	USA	Russian Federation	Denmark	USA	Lithuania	Czech Republic	Denmark
16	Denmark	HK-China	France	Lithuania	Slovak Republic	Switzerland	Nova Scotia (Canada)
17	Switzer-land	France	Sweden	Sweden	Russian Federation	Macao-China	Latvia
18	Spain	Greece	England	England	Latvia	Austria	UnitedStates
19	Czech Republic	Slovak Republic	Austria	Scotland	Scotland	Belgium	England
20	Italy	Iceland	Germany	Israel	Malaysia	Ireland	Austria

Average acheivement signific-antly higher than England / UK

Average acheivement signific-antly lower than England/UK

Average acheivement not significantly different from England /UK

17 Multiple comparisons of mean performance based on the read-ing literacy scale. *Knowledge and Skills for Life: First Results from PISA 2000* (Paris: OECD, 2001), p. 53.

18 I. V. S. Mullis, M. O. Martin, E. J. Gonzalez & A. M. Kennedy, *PIRLS 2001 International Report: IEA's Study of Reading Literacy Achievement in Primary Schools* (Chestnut Hill, MA: Boston College, 2003), p. 27.

19 England inserted into ranking based on its raw score. OECD (2004), p. 92.

20 Multiple comparisons of mean performance based on the sci-ence literacy scale. *PISA 2006 Science Competencies for Tomorrow's World* (Paris: OECD, 2006), p. 56.

21 I. V. S. Mullis, M. O. Martin, A. M. Kennedy and P. Foy, *PIRLS 2006: International Report* (Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College, 2007).

22 M. O. Martin, I. V. S. Mullis, E. J. Gonzalez & S. J. Chrostowski, *TIMSS 2003 International Mathematics Report: Findings From IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades* (Chestnut Hill, MA: Boston College, 2004a), p.38.

23 M. O. Martin, I. V. S. Mullis, E. J. Gonzalez & S. J. Chrostowski, *TIMSS 2003 International Science Report: Findings From IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grade* (Chestnut Hill, MA: Boston College, 2004b), p. 8.

相關數據：

還有，教師、校長對課改的觀感

*這些數據有一些弱點

- 面對未來：
  –教學質素要不斷提升
- 我們唯一的資源：人力

兩個值得思考的問題：

1. 如何平衡鬆緊

鬆

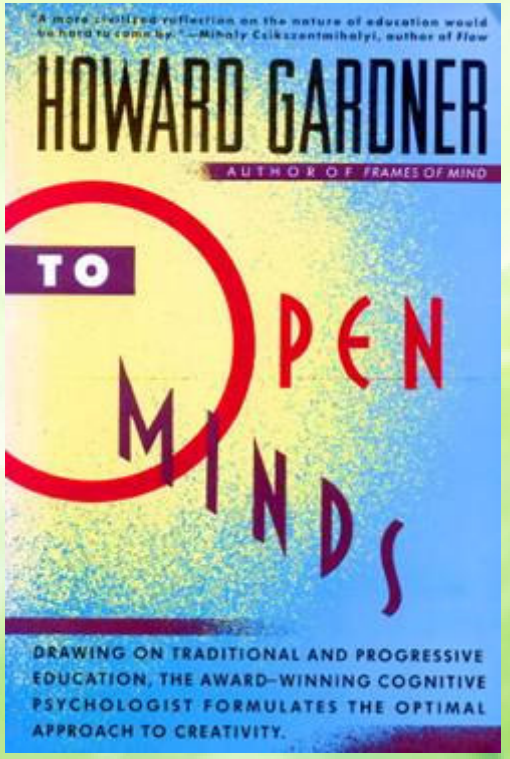
- 校本課程
- 教師爲本
- 學生爲本
- 創新

緊

- 問責
- TSA
- ESR
- 課程要求 (例如必修)

- Prof Ngai Ying WONG
- Wong, N.Y. (accepted for publication). Confucian Heritage Culture (CHC) Learner's Phenomenon: From "Exploring the Middle Zone" to "Constructing a Bridge" *Zentralblatt fuer Didaktik der Mathematik*

Looking for good ways of work



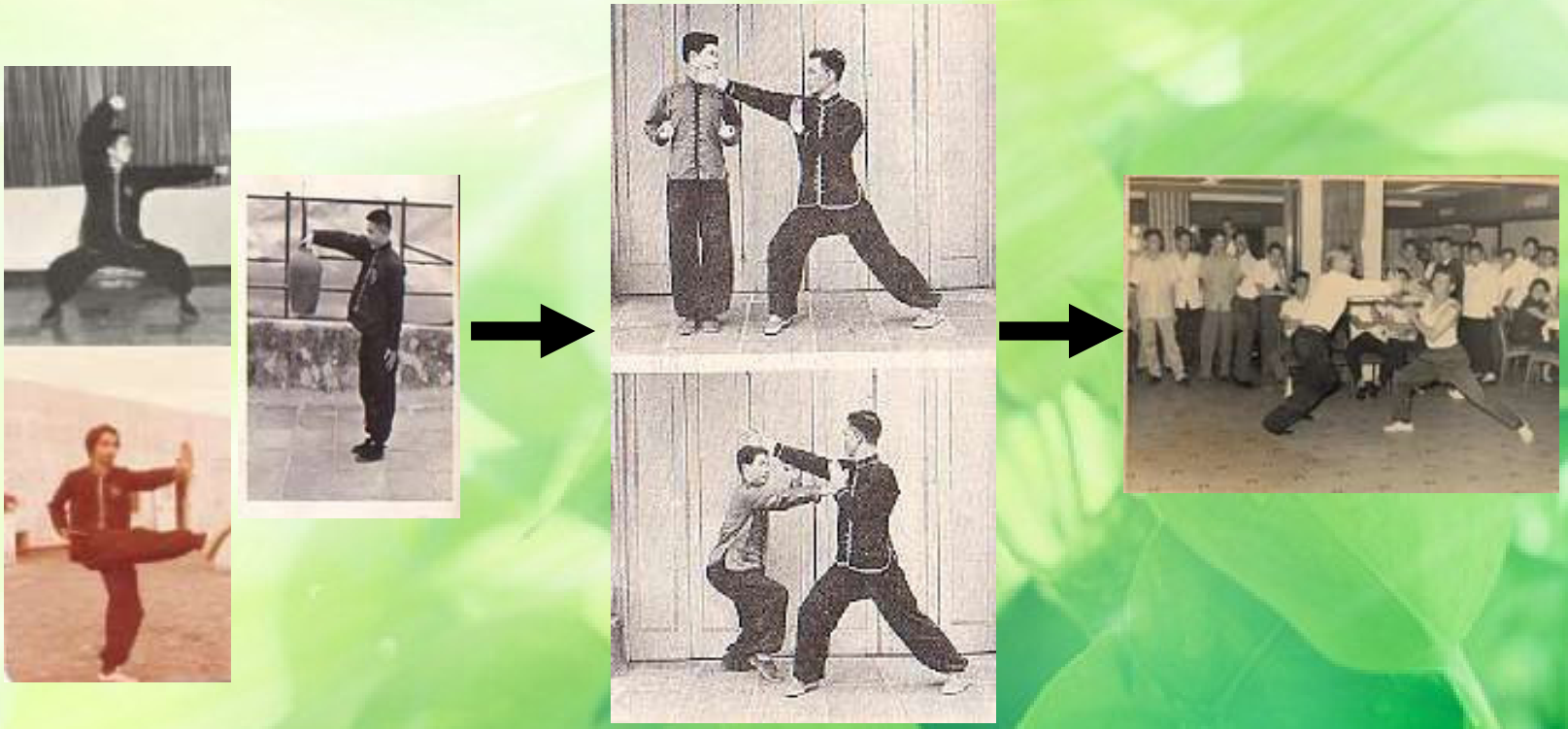
basics

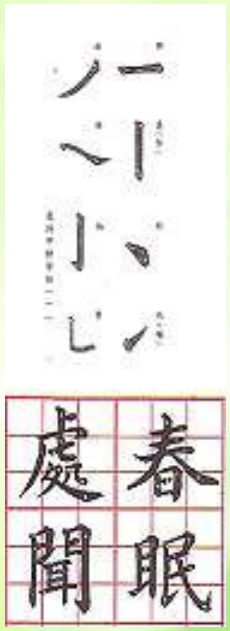
imitate the master

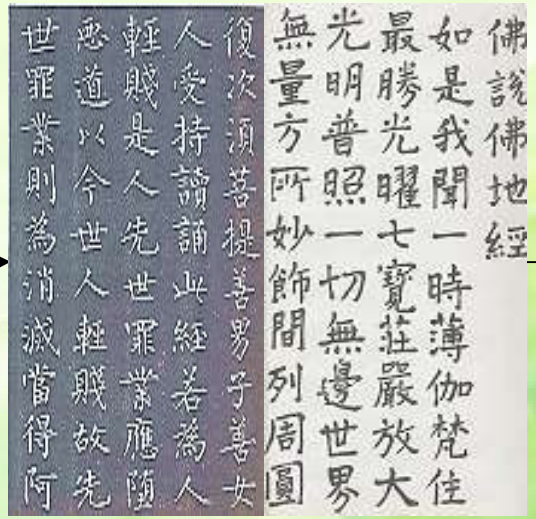
Self becoming a master

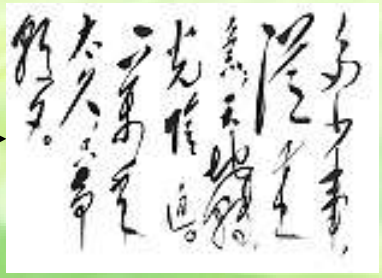
Reflect with my upbringings

From “entering the Way”（入法）to “transcending the Way”（出法）






佛說佛地經
如是我聞一時薄伽梵住
最勝光曜七寶莊嚴放大
光明普照一切無邊世界
無量方所妙飾間列周圓
復次須菩提善男子善女
人受持讀誦此經若為人
輕賤是人先世罪業應墮
惡道以今世人輕賤故先
世罪業則為消滅當得阿



Teacher led yet learner centred (or learning-centred)

"Entering the way"

- students attentive listening to the teacher
- lessons well-prepared and structured
- students seldom ask questions to interrupt
- teachers check whether students follow through
- teachers do not cater for individual differences in class

"Transcending the way"

- students have a lot of guided after-class learning
- teachers see the moral responsibility of providing individual care, including those not directly related to learning (e.g. personal growth and transmission of cultural values such as listenership)

Curriculum issue: process and content

"content/product"
basic skills, memorisation, drills & practices…

Process/process abilities
ability, high-order thinking skills, generic skills, creativity

From "middle zone" to "bridge" ?

2. 不死仙丹？

改革者大都期望找到一種方程式，一下子解決所有問題，很可惜，從來沒有成功例子。

- 教與學似乎很簡單

學生：幾乎每個都不一樣

－學生背景

－學生學習風格

－學生喜歡的學習風格

－學生的天資

等等

教師：也各有風格

教學內容：不同內容，不同教法

- 變式教學的經驗

The effects of spiral *bianshi* curriculum: A case study of the teaching of "speed" for Primary 6 students in Hong Kong

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Introduction

- ***Bianshi*** **變式 literally means “variations”. The basic idea is to present mathematics examples and problems systematically with variations introduced.**

Research Objectives

- To actually develop spiral *bianshi* mathematics curriculum, implement it and to evaluate its effectiveness
  - A case study of the teaching of 'speed' for Primary 6 students in Hong Kong

Conceptual framework

Background knowledge (skills):
1. The concept of division: sharing and grouping
2. Changing units of time
3. Changing units of length

Background knowledge (concept):
Understanding the concept of "rate" based on division

Introducing "Speed":
Based on different "rates" to introduce the concept of "rate"
(Inductive *bianshi*)

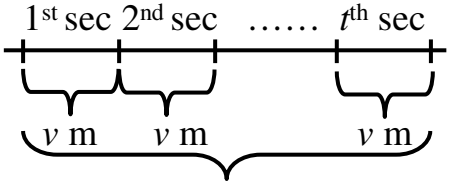
Using the scene of division (sharing) to build up the formula:
Speed = Distance ÷ Time
(Inductive *bianshi*)

To strengthen students' numeracy skills:
Speed = Distance ÷ Time
(Broadening *bianshi*)

Application (to distinguish the different units):
Speed = Distance ÷ Time
(Broadening *bianshi*)
(Deepening *bianshi*)

Application (to distinguish the different scenes):
Speed = Distance ÷ Time
(Applicative *bianshi*)

Using different methods: returning to original equation, algebra, scenes or figures etc., to prove:
Distance = Speed × Time
Let's say the speed is "v ms^{-1}", the distance is "vt" after t seconds:



(Broadening *bianshi*)

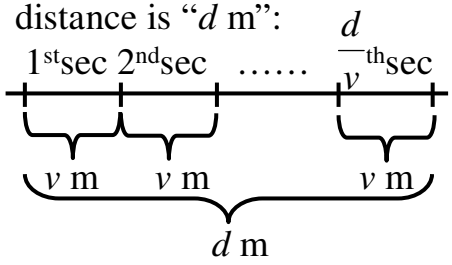
Conceptual framework

To strengthen students' numeracy skills:
Distance = Speed × Time
(Broadening *bianshi*)

Application (to distinguish the different units):
Distance = Speed × Time
(Broadening *bianshi*)
(Deepening *bianshi*)

Application (to distinguish the different units):
Distance = Speed × Time
(Broadening *bianshi*)
(Deepening *bianshi*)

Using different methods: algebra, scene (grouping) or figures etc., to prove:
Time = Distance ÷ Speed
Let's say the speed is "v ms^{-1}", the distance is "d m":



(Broadening *bianshi*)

To strengthen students' numeracy skills:
Time = Distance ÷ Speed
(Broadening *bianshi*)

Application (to distinguish the different scenes):
Distance = Speed × Time
(Applicative *bianshi*)

Application (to distinguish the different units):
Time = Distance ÷ Speed
(Broadening *bianshi*)
(Deepening *bianshi*)

Application (to distinguish the different scenes):
Time = Distance ÷ Speed
(Applicative *bianshi*)

More applications:
To solve complex problems on "Speed"
(Applicative *bianshi*)

Structure and instruments of the pre-test and post-test

	Dimension	Instrument
Cognitive factor		
Pre-test	Prerequisite knowledge: -ability to convert units -ability to perform four rules in numbers and decimals -level of understanding of the concept of division & ability to perform the calculation of rates	Items were developed by the research team based on the curriculum taught before the experimentation.
Post-test	Acquired knowledge: -ability to convert units -understanding of the concept of speed -ability to perform the calculation of speed problems	Items were developed by the research team based on the targets and content of the curriculum guide.

Structure and instruments of the pre-test and post-test

	Dimension	Instrument
Affective factor		
Pre-test questionnaire	Attitudes towards mathematics	-ability to convert units -Mathematics Attitude Scale (Aiken, 1974) -Mathematics self-concept subscale in Self Description Questionnaire-I (Marsh, 1992)
Post-test questionnaire	Same as the pre-test questionnaire with additional items on students' views on those listed on the right.	-Questionnaire same as pre-test plus 15 items on the following three areas: -understanding of the topic taught -conception of the topic -their attitudes toward the learning of the topic

Quantitative Results

t-test results of students' cognitive learning			
	Experimental group	Reference group	t-value
Pre-test (Full mark: 22)	16.97 (3.206)	17.67 (3.603)	–0.83
Post-test (Full mark: 23)	14.94 (3.211)	12.00 (4.650)	2.99**
Notes: ** $p < 0.01$; figures in parentheses are standard errors			

Remarks: The pre-test and post-test are not the same. The questions in the pre-test are meant to reveal students' mathematical knowledge needed to understand the concepts to be taught, while the post-test is designed to assess how much students have acquired during the try out period.

Quantitative Results

Hierarchical regression analysis taking students' post-test as dependent variable			
Predictor	Hierarchical regression models predicting post-test scores		
	Model 1	Model 2	Model 3
(Intercept)	0.142 (0.186)	0.65 (0.165)	–0.307 (0.172)
Boys	–0.253 (0.248)	–0.116 (0.222)	–0.180 (0.198)
Pre-test		0.480*** (0.111)	0.518*** (0.099)
Experimental group			0.817*** (0.196)
Adjusted R^2	0.001	0.218	0.380
$\triangle R^2$		0.217***	0.162***
Notes: * p < 0.05; *** p < 0.001; figures in parentheses are standard errors; for coding, boys are "1" and girls are "0"; experimental group is "1" and reference group is "0."			

Qualitative Results (interview)

Attitudes toward mathematics and self-concept

Two major findings:

1. Students did not show any significant changes in the affective side
2. There were significant positive correlations among enjoyment, motivation, free from fear, self-concept, and the importance of learning mathematics

只能建議大原則

只能「粗」控

而非「微」制

條件：

教師：有動力

有能力

能力：掌握多種方法

按照課程要求

照顧學生特點

採用合宜的方法

教改出了不少問題

但是在策略上也有一些可取的地方

在學生人數下降

強力指引

殺校壓力

→

教師及學校

- 較前主動
- 較前接受多種方法

- 到校支援，也有一定的成果

→擴闊學校及教師的視野

→改善學校的變革能量

因時制宜

審時度勢

- 還有兩點看法

1. 學生的學習：絕不局限於課量學習

學校的文化

師生的互動

現時的問題

學校文化

師生互動

→ 比前有所不足！

何玉芬(2005)：教師欠缺了空間、時間與學生接觸

2. 學校文化

- 生存、功利
- 賣廣告、過份地推銷
- 過份地募捐

帶來甚麼信息？

學生學到些甚麼呢？

以上的看法

在小學裡的條件較好，現時問題最大的是中學。

實施新高中課程

－嚴重地影響學校的運作

教師的時間

新高中課程的結構有很大的問題

由於已經決定於 2009年實施，

已*無路可退*

但校本評核

還有可退之路

作爲教師及校長

我們可以做的：

–建立專業學習社群

–互相交流

記著：我們也是學習者啊！