TECHNOLOGY CONTENT IN HIGH SCHOOL TEACHER TRAINING PROGRAM IN VIETNAM CURRENT SITUATION AND ISSUES FROM A DIDACTIC POINT OF VIEW

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PLAN

Brief introduction about Vietnam

- Some features of educational system and teacher traning in Vietnam
- Curriculum content at high school in Vietnam
- Curriculum content in High School Teacher (HST) Training Institution in Vietnam
- Current use of ICT in secondary education
- Some didactical concepts
- Conclusions and Discussion

INTRODUCTION TO VIETNAM



INTRODUCTION TO OUR COUNTRY



The first university of Vietnam (founded at 12th century)

VAN MIEU QUOC TU GIAM : THE FIRST UNIVERSITY IN VIETNAM



INTRODUCTION TO VIETNAM

- Vietnam: the Socialist Republic of Vietnam,
- The easternmost country on the Indochine Peninsula in Southeast Asie
- Total area of 331 114 km²; a coastal line of approximately 3,200 km
- Population 90.3 million in 2012, ranked the 13th most populous country in the world and the 8th in Asia
- GDB (nominal) in 2012: \$137.681 billion; per capital: \$1,523

INDICATORS ON SOCIO-ECONOMIC DEVELOPMENT IN VIETNAM (2000-2020)

Fields ₽	Year₽			
φ	2000 ¢	2005 ₽	2010¢	2020 ¢
Industry₽	36.1%	41%	40-41‰	47%-48%+
Agriculture₽	24.29‰	20.5%	16%-17‰	8% -9% ~
Services₽	39.32%	38.5%	42%-43% ²	43%-44%
Average Growth Rate of GDB+	7‰	7.5‰	> <mark>8%</mark> +	>8.5%
GDB by person@	360 ₽	640	> 1.100¢	> 3000
TOTAL Population (thousand)+	77 .63 5₽	83.1124	<mark>88.316</mark> ₽	98.104+/
Distribution by area↔	ų.	له	ų	له
+ Agriculture↔	62.6% ⊷	56.7%⊬	50.2 ‰ ≀	28.8%
+ Industry	13.1%	17.9%⊬	ب%22.0	32.7%
+ Services 🖉	24.3%	25.4‰	27.8‰	38.5%

Source: Vietnam's Ministry of Planning and Investment (2006)

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OVERVIEW OF VIETNAMESE EDUCATIONAL SYSTEM



SOME FEATURES OF EDUCATIONAL SYSTEM AND TEACHER TRANING IN VIETNAM

• In the 2011-2012 academic year:

Level	Public Institution	Private Institution	Teaching staff	Number of Students
Colleges	187	28	24 437	756 292
Universities	150	54	59 672	1 448 021
Total	337	72	84 109	2 204 313

Source: Vietnam's Ministry of Education and Training (2012)

SOME FEATURES OF EDUCATIONAL SYSTEM AND TEACHER TRANING IN VIETNAM

● In the academic year 2010-2011:

133 teacher training institutions including

- 14 universities of education
- 49 universities comprising faculty of education
- 39 colleges of education
- 24 colleges comprising faculty of education
- 3 professional school of education
- 4 institution of educational management and leadership training

Source: Vietnam's Ministry of Education and Training (2011)

HIGH SCHOOL TEACHER (HST) TRAINING : 3 MODELS

- Popular model: University of Education (4 years for general and pedagogic contents) with bachelor dgree in education
- New model: University of Education, VNU (3 years for subject contents + 1 year for pedagogic contents) with bachelor dgree in education
- Sort training: Bachelor degree in science + 6-12 months training in pedagogy content: certificate in education

SOME FEATURES OF EDUCATIONAL SYSTEM AND TEACHER TRANING IN VIETNAM

Item	Schools	Pupils	Teacher
Primary Level	15 337	7 100 950	366 045
Lower Secondary Level Pupils	10 797	4 926 401	311 970
Upper Secondary Level	2 669	2 755 210	150 133
Total	28 803	14 782 561	828 148

Source: Vietnam's Ministry of Education and Training (2012)

SOME FEATURES OF EDUCATIONAL SYSTEM AND TEACHER TRANING IN VIETNAM



Classroom

classroom in rural area

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Feudal era

- At the XIth century, the Ly dynasty set up a first mandarin competitive examination (for every one except actors and women !) in 1075
- Principle of school organisation : one school/one master, paid-off by families and left to private initiative
- Classes contents : devoted to reading, writing, reciting classical texts by heart
- There was neither teaching nor training of mathematics at school

Teacher and school in the ancient time



Colonial era

- From the second half of the 19th century: French colonial aggression (from 1858)
- New generations of students moulded in the French schools learning Physics, Algebre, Biology, Geography, and...Republican constitution, Electoral law etc.
- Higher education was only opened in 1940 (wartime)
- Only 10 Vietnamese students graduated in Maths, 2 obtained a Master (in 1940)
- 1942: first glossary of Sciences in Vietnamese by Hoang Xuan Han wich allows textbooks in sciences at all levels to be written in Vietnamese 18 156th CICE Open Seminal

Time of independence (after 1945)

- The French influence of the evolution of Vietnamse education in high school
- In 1945: two sections A (Classical literature) and B (Modern literature)
- In 1950 (wartime) : school attendance war reduced from 10 to 9 years (suppression of several subjects of the French syllabus: Probabilities, Analytic Geometry, Analysis, Arithmetic

Time of independence (1945-1975)

In the North of Vietnam

- The influence of the Soviet Union (SU) system on Vietnamese education
- The SU and the communist countries supported for higher education (BAs, Masters, PhDs)
- In 1956: 2nd educational reform to the SU curricula
- The 10-year curricula closed to the SU one remained unchanged from 1956 to 1980

In the South of Vietnam

• Curricula influenced by the USA curricula

Time of independence (after 1975)

• 1975-1990 : curricula inspired by different countries

• Three reforms

+ in 1990, 3 sections : scientific, techno-scientific, literary sections at the begining of high school, introduction of vectorial method in geometry, of of integral caculus, mathematical statistics and probability, and of computational science

+ in 1998: return to the unique section before University; entrance examination of 4 streams A, B, C, D

+ in 2005: new division into two sections : natural and social science

- The goal of the last syllabus of mathematic contents :
 - + to lighten theorical input by romoving contents and techniques too complex
 - + to add activities and problem solving
- This reform seems to focus more on teaching content and organisation than on the transformation of teaching pratices
- Outlines of the last syllabus

MATHEMATICS CONTENT IN HIGH SCHOOL IN VIETNAM

Mains characteristics

- Pay attention to logical thinking, proof
- Introduction of some « real life problems »
- Curricula are very much academically and classically biased
- Focus too much on backward examination systems
- Do not pay attention to creativity, practicality and career orientation;



AN EXAMPLE OF AN ENTRANCE EXAM INTO UNIVERSITIES

BÔ GIÁO DUC VÀ ĐÀO TẠO ĐỂ THI TUYỂN SINH ĐẠI HỌC, CAO ĐẰNG NĂM 2006 Môn thi: TOÁN, khối A ĐỂ CHÍNH THỨC Thời gian làm bài: 180 phút, không kể thời gian phát để PHẦN CHUNG CHO TẤT CẢ CÁC THÍ SINH Câu I (2 điểm) 1. Khảo sát sự biến thiên và vẽ đồ thị của hàm số $y = 2x^3 - 9x^2 + 12x - 4$. 2. Tìm m để phương trình sau có 6 nghiệm phân biệt: $2|x|^3 - 9x^2 + 12|x| = m$. Câu II (2 điểm) 1. Giải phương trình: $\frac{2(\cos^6 x + \sin^6 x) - \sin x \cos x}{\sqrt{2} - 2\sin x} = 0.$ 2. Giải hệ phương trình: $\begin{cases} x + y - \sqrt{xy} = 3\\ \sqrt{x+1} + \sqrt{y+1} = 4 \end{cases}$ $(x, y \in \mathbb{R}).$ Câu III (2 điểm) Trong không gian với hệ tọa độ Oxyz, cho hình lập phương ABCDA'B'C'D' với A(0; 0; 0), B(1; 0; 0), D(0; 1; 0), A'(0; 0; 1). Gọi M và N lần lượt là trung điểm của AB và CD. 1. Tính khoảng cách giữa hai đường thẳng A'C và MN. 2. Viết phương trình mặt phẳng chứa A'C và tạo với mặt phẳng Oxy một góc α biết $\cos \alpha = \frac{1}{\sqrt{6}}$ Câu IV (2 điểm) 1. Tinh tich phân: $I = \int_{-\infty}^{\frac{1}{2}} \frac{\sin 2x}{\sqrt{\cos^2 x + 4\sin^2 x}} dx.$ 2. Cho hai số thực $x \neq 0$, $y \neq 0$ thay đổi và thỏa mãn điều kiện: $(x + y)xy = x^2 + y^2 - xy$. Tìm giá trị lớn nhất của biểu thức $A = \frac{1}{v^3} + \frac{1}{v^3}$.

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TEACHER TRAINING CURRICULUM

- Exemple 1
- Exemple 2
- Exemple 3

Remarks

- No specifics content in ICT use in Education
- No specifics (or very little) in computer softweres in teaching and learning

Pre-in service teacher are mostly weak in presentation skill, ICT use skill, repport elaboration skill and real life problem solving skill. (Dinh Quang Bao, 2011)

TEACHER TRAINING (SECONDARY SCHOOL): EXEMPLE OF MATHS

- Similaire contents on « <u>Methodology of</u> <u>teaching and learning mathematics</u> » :
 - Generalities
 - Typical situations on teaching and learning mathematics
 - How to teach some specific contents: number systems, equation and inequation, functions, derivative and integral, geometry on space, vector and coordinate, mathematic applications; set and logic
- How to use of ICT in math education (very brief)

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CURRENT SITUATION OF THE USE OF ICT IN EDUCATION

- The Ministry of Education and Training of Vietnam pays a lot of attention on using ICT in Education
- At the end of the year 2003, there is about 96% of high schools in Vietnam which are connected to Internet
- Big budget for equipments
- National conferences about ICT on education for every year...and many other activities



CURRENT SITUATION OF THE USE OF ICT IN EDUCATION

• In Bentre Province (in the South)

- In 2008, the Bentre DOET have signed an aggrement with Viettel Bentre in order to connect 100% high schools, 91,24% Lower secondary schools, 80% primary schools to Internet (free connection). In 2009, 100% schools have Internet connection ADSL.

- 100 staff of Bentre DOET have email address
- Administrative instruction from Bentre DOET to each school through Internet system

CURRENT SITUATION OF THE USE OF ICT IN EDUCATION

- In Bentre Province (in the South)
- In 2009-2010: 100% high schools have at least 2 computer labs (25 computors in each lab); 86,7% lower secondary schools have at least 1 computer labm; 18% primary schools have 1 computer lab; 100% have coputers for administrative works and video projector (at least one).
- Teaching straff using email: 40,26%
- Teaching staff searching information in Internet: 66%
- Teaching staff using computer to elaborate lessons: 53,27%
- Teaching staff using computer softwares in teaching: 30,8%.

- Computer software widly in use: Word, Excel, PowerPoint, Flash, Violet; more specifics: Sketchpad, Cabri 3D, Mathtype (Maths), Chemdraw, Crocodile, Chemistry, MC-Mix (Sciences), English study, CD-R Dictionary (English), Encarta (Social Sciences)...

ACTUAL SITUATION OF THE USE OF ICT IN MATHEMATIC EDUCATION

• How ? What's happens ?

 Regular caculators and geometric softwares

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REGULAR CALCULATOR IN THE MATHEMATIC CURRICULUM

- Before 2005: 3 sessions of 45 minutes per year only on curriculum (and this at the end of year) about using calculators. No activites for geometric software
- Now : some activites about using calculator have been introduced in new curriculum (from 2005-2006) but not yet about using geometric software
- National competition of using Casio Caculator for « talented » students



REGULAR CALCULATORS ALLOWED IN CLASSROOM



2001



2004



REGULAR CALCULATORS ALLOWED IN ENTRANCE EXAMINATIONS

- Most used Casio FX 570 MS and Casio FX 570 ES (from 2006)
- Casio FX 95, FX 220, FX 500A, FX 500 MS, FX 570MS, FX 570 ES; Sharp EL 124 A, EL 250S, EL 506 W, EL 509 WM; Canon FC 45S, LS153 TS, F 710, F 720.

USING CALCULATORS IN CLASSROM

• The aims of using calculator:

- To verify results
- To aid calculations (Nguyen N.H, 2006)

AN EXAMPLE OF MATHEMATIC SOLUTION : NON APPOXIMATIVE VALUE



USING GEOMETRIC SOFTWARE IN CLASSROOM

Dynamic geometric software have been introduced in class rooms (in some regions of Vietnam) from around 2000. In 2005, a mathematic teacher has been awared a national prize as knight in technology of information and communication for using Cabri in his teaching





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USING DYNAMIC GEOMETRIC SOFTWARE

 Most used geometrical software: Cabri 2D, 3D and GSP

Main use : to show figures, to illustrate « things » (Nguyen C.T., 2009)

Let given a pyramid SABCD. ABCD is a square. AB = a. SA \perp (ABCD) and SA = a.

- a. Prove that 4 lateral planes are right-angled triangle
- b. Let (α) ⊥ SC by the point A. This plan cuts SB, SC, SD respectively at B', C' and D'. Prove that B'D' is parallel to BD and AB' is perpendicular to SB
- c. Let M a point that moves on the segment BC. Let K the orthogonal projection of the point S on DM. Determine the locus of the point K
- d. Let BM = x. Calculate SK in function a and x. Determine the minimal value of SK



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USE OF ICT - SOME EXEMPLES

● Exemple 1

• Exemple 2



UNESCO STAGES OF ICT USE (2010)



ICT DEVELOPMENT INDEX (IDI) FOR COUNTRIES IN THE ASIA-PACIFIC REGION FOR THE YEARS 2008 AND 2007

Economy	Rank 2008	IDI 2008	Rank 2007	IDI 2007
Republic of Korea	3	7.68	2	7.23
Japan	-8	7.12	7	6.89
Singapore	14	6.95	15	6.47
Australia	15	6.90	14	6.51
New Zealand	16	6.81	16	6.38
Macao, China	24	6.29	28	5.73
Brunei Darussalam	42	5.07	42	4.77
Malaysia	56	3.96	55	3.66
Thailand	76	3.27	75	3.03
China	79	3.23	77	3.03
Viet Nam	86	3.05	93	2.61
Philippines	90	2.87	95	2.61
FIJI	91	2.81	88	2.69
Mongolia	95	2.71	94	2.61
Sri Lanka	105	2.51	104	2.32
Indonesia	107	2.46	108	2.15
India	117	1.75	116	1.62
Lao PDR	118	1.74	117	1.60
Myanmar	119	1.71	118	1.60
Cambodia	120	1.70	120	1.53
Bhutan	123	1.62	124	1.48
Papua New Guinea	151	1.08	150	1.06

Source: Data extracted from the International Telecommunication Union (ITU), cited in *Measuring the Information Society* (ITU, 2010).

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Constructivism as learning theory arises from the need to account for, in a more rational way, how human beings learn. It is based on the thesis that knowledge is not transferred from one person to another, but the individual who learns constructs its own knowledge. About the act of thought, Dewey highlights five steps: a) perception of a difficulty; b) determination and definition of that difficulty; c) proposal of a possible solution; d) development of the consequences of the proposal; and e) later observations and research that lead to the acceptance o rejection of the proposal

 According to Brousseau (1997) «In modern didactique, teaching is the devolution to the student of an adidactical, appropriate situation; learning is the student's adaptation to this situation».



The basic didactical triangle

The modern conception of teaching therefore requires the teacher to provoke the expected adaptation in his/her students by a judicious choice of "problems" that he/she puts before them. These problems ... must make the students act, speak think and evolve by their own motivation... The student knows very well that the problem was chosen to help her to acquire a new piece of knowledge, but he/she must also know that this knowledge is entirely justified by the internal logic of the situation and he/she can construct it without appealing to didactical reasoning. Not only can she do it, but he/she must do it because she will have truly acquire this knowledge only when being able to put it to use by himself/herself in situations which she will come across outside any teaching context and in the absence of any intentional direction. Such a situation is called an adidactical situation.



The situation or problem chosen by the teacher is an essential part of the broader situation in which the teacher seeks to devolve to the student an adidactical situation which provides him/her with the most independent and most fruitful interaction possible... He/She is thus involved in a game with the system of interaction of the student with the problems she gives her. This game, or broader situation, is the didactical situation.



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AN EXAMPLE



Nguyen C.T. (2006), Truc L. (2003)

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CONCLUSION

- Further theorical frame work in teaching's training at Education universities
- Changes teachers training and practices
- Changes of the curricula of mathematics contents at high schools
- Changes of the way of pupils evaluations
- To sensitize the decision makers on education
- To decrease the prices of materials: softwares, calculators etc.
- Further connections with research activities in the world

Thank you for your attention !

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