

Training High Qualified Teachers in Vietnam: Challenges and Policy Issues

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Abstract

In this paper we introduce first some characteristics of the educational system in Vietnam nowadays. We focus on the models of training teachers at different universities of education in Vietnam in general and the one in our university in particular. We then identify the features which differentiate our model of training, a training of high qualified teachers, with other models in the country. Our university, the University of Education, is experimenting with two new procedures of educating secondary school teachers: “3 plus 1” and “4 plus 1”. The “3 plus 1” procedure is designed for students who for the first three years follow basic study units at either the University of Natural Sciences or the University of Social Sciences and Humanities which all belong to the VNU, and who for the last year are provided with pedagogical knowledge, skills and teaching practice at the University of Education, VNU. The “4 plus 1” procedure is for B.A./B.Sc holders registered with the University of Education for one year to be offered pedagogical knowledge and practice teaching skills. This model represents both advantages and disadvantages which will be discussed. Some challenges of this model will be also mentioned.

1. Generality about the educational system in Vietnam

After 15 years of renovation (from the 1990's) Vietnamese education has achieved positive results such as increased enrollment, diversification of delivery modes and improved school infrastructure etc. which are summarized as below (Ministry of Education and Training – MOET, 2003):

- A relatively complete, unified and diversified education system has been built with all levels from pre-school education to doctorate training as shown in Figure 1. The general education school network is expanding throughout the country. The education system has begun to diversify in forms, modes of delivery and resources. From a system dominated by public and formal schools, currently in the education system there are non-public schools, different forms of informal education, open learning, distance education and joint ventures with foreign institutions. The proportion of students of non-public education institutions is increasing in total enrollment.
- The enrollment is rapidly increasing, initially satisfying the learning needs of society. For

instance, in school year 2000 - 2001¹ there were about 18 million school pupils and 820 thousand vocational students, among them 130 thousand long-term vocational students. The labour force, trained by different forms and at different levels, is 20% of the total labour force of the country, meeting the objective set by the Resolution of the Second Plenarium of the Party Central Committee of the VIII Term.

- Social equity in basic education is ensured with education in the regions with ethnic minorities. For instance about 250 boarding and more than 100 semi-boarding schools for ethnic minority students have been established. About 94% of the population over 15 years are literate; the average number of schooling years is 7.3.

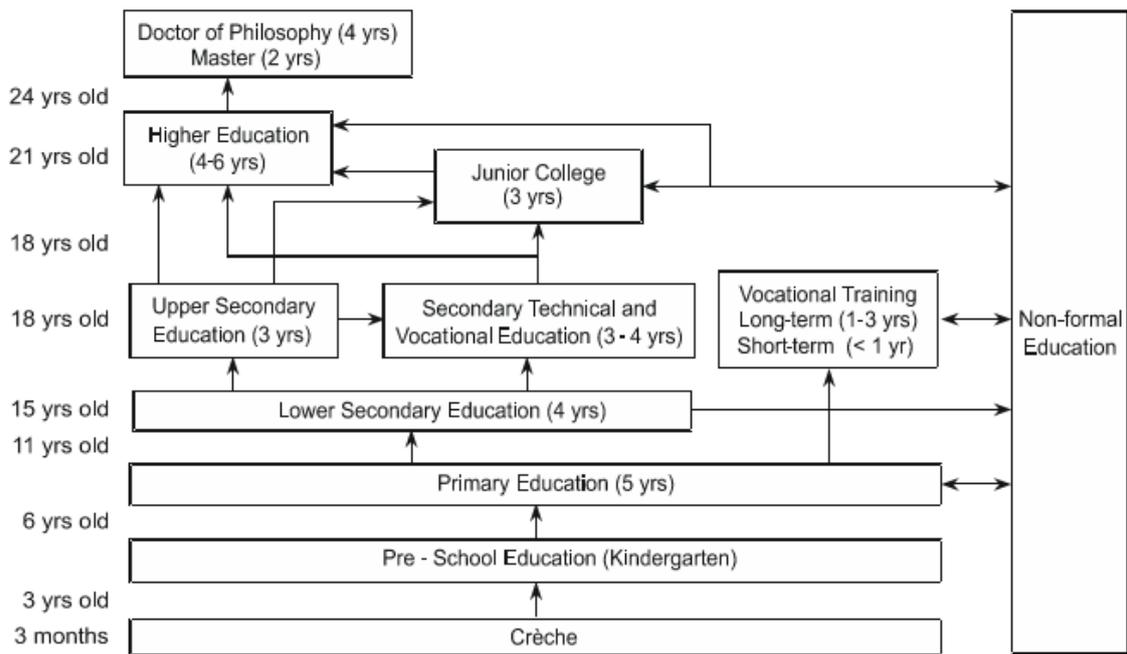


Figure 1. The educational system in Vietnam

- The social participation in education has brought initial results. Nowadays different social forces can be gradually participating more actively in the mobilization of children in schools, construction of school infrastructure, investment in school buildings and making financial contributions to education in different forms. The percentage of financial contribution by society in the total education expenditure has gradually increased, reaching about 25% in 2000.

- The quality of education is changing in some aspects. The level of knowledge, the capability to get new knowledge for certain numbers of students is increasing; the education for gifted students has achieved a high level in the region and in the world. For instance, the number of student-winners of international and national competitions in some subjects is increasing.

¹ In the school year of 2000 - 2001: About 25% financial contribution of society : non-public education institutions 66% of creche children; 50% of kindergarten children, 34% of upper secondary school pupils and 11% of higher education. About 18 million school pupils and 820 thousand vocational pupils. About 118 higher education students / 10,000 people. State budget increased from 8% (in 1990) to 15%.

Higher education is growing step by step, training numerous contingents of scientists and technicians from bachelor to doctor levels, who are working and have brought important contributions to different socio-economic sectors.

- The UNDP Human Development Index (HDI) of Vietnam has raised considerably in the last 10 years; from 0.456 and ranked at position 121 out of 174, it has increased to 0.681, positioned 101 out of 174. Compared to the economic development index (GDP/Capita), the HDI has gone up 19 positions.

In Vietnam, political stability, achievements in economic development, and improvement of people's life in the renovation period created favorable conditions for education to develop.

2. Teacher training in Vietnam

a) Generality

Since the introduction of *Doi Moi* during the early 1990s, a number of changes have occurred that exerted an important impact on Vietnam's system of education and training as shown below (Nguyen Thanh Hoan, 2008) :

- Government spending on education and training (E&T) has increased both in absolute terms and as a percentage of overall government spending during the 1990s.

- Elimination of many regulations restricting or proscribing the private sector's role in E&T. New decrees and resolutions were passed that encourage the private sector to enter the education field. Semi-public and people-founded institutions, although they account for only a tiny proportion of total enrollments at present, are increasing rapidly in number.

- Allowance for public institutions to levy tuition fees, though only within rather strict limits, and to charge for other goods and services sold to the public.

The teacher training system in Vietnam has been reorganized during the last few years. Figure 2 provides a summary of the types of teacher training programs currently available.

<i>Type</i>	<i>Quantity</i>	<i>Supplying Teachers for</i>	<i>Level of Management</i>
University of Pedagogy	10	Lower and upper secondary schools; Kindergartens	MOET and provincial governments
University of Education, VNU	1	Lower and upper secondary schools	Government
Teacher Training College	45	Lower secondary schools (and some primary schools)	Most are under provincial governments and some under MOET (e.g. Central Music and Painting Teacher Training College)
Educational Training Management College	2	Provincial and district department of education; General schools	MOET
Primary Teacher Training Institutions (normal schools)	35	Primary schools	Provinces and cities

Figure 2. Network of teacher training institutions at all levels in the year 2001

Vietnam's teacher training systems can be illustrated in the following figure.

<i>Level \ Training System</i>	<i>Under standard</i>	<i>Standard</i>	<i>Above Standard</i>
Preprimary		12 + 2 & 9 + 3	12 + 3 & 12 + 4
Primary	12 + 2 & 9 + 3 (for difficult areas)	12 + 3 (college education)	12 + 4 (higher education)
Lower Secondary		12 + 3 (college education)	12 + 3 + 1 (higher education)
Upper Secondary		12 + 4 (higher education)	12 + 4 + 2 (Post-graduate education)

Figure 3. Teacher training systems by level of education in Vietnam

Vietnam's teacher training has the following characteristics (Nguyen Thanh Hoan, 2008).

- In principle, only teacher training institutions have the right to train teachers. But recently some major universities have been allowed to establish teacher training departments of their own. This differs from other countries;

- Teachers are trained for the levels of education and subjects they will teach. For instance, a primary teacher must be able to teach all subjects; at the lower secondary level, a teacher must be able to teach one main subject and one additional subject; and at the upper secondary level, a teacher can teach only one subject;

- Although the present qualification for teachers is not very high, there is a tendency to standardize teachers by providing university-level education for teachers of all levels in the not too distant future². Due to differences in geographical areas, teacher-training systems also vary to a certain extent. For instance, areas with difficult conditions adopt 9 + 3 or 5 + 3 systems. There is now an effort to eliminate such systems;

- In-service teacher training is very complicated, especially for the primary and lower secondary education levels. Future programs must be based on the standards set by the Ministry of Education and Training.

- Today, the majority of teachers are using the traditional teaching method such as the chalk-and-talk approach or oneway lecture, and not the new teaching approaches such as learner- or child-centered approach, child-to-child approach, problem-solving approach, teaching through case studies, etc. At the same time, they have a poor knowledge of foreign languages and information technology (IT) and so they cannot apply IT well to their teaching activities;

The content of training can be composed into three groups of subjects:

Group I: consists of shared subjects for all student-teachers such as psychology, philosophy, civic education, pedagogy and information science;

Group II: consists of subjects directly related to what must be taught in school by would-be teachers;

² In the Nghe An province, from 2005 every teacher at lower secondary school has to obtain a teacher education university diploma.

Group III: consists of professional theory subjects and subject didactic. (See appendix 2)

The type of training is mainly meant to provide intensive regular training in central and local teacher-training institutions under the national unified training programs developed and issued by the MOET to meet the new requirements of teaching the new national curriculum and textbooks and to keep pace with the general trends in education across the region and all over the world. Vietnamese education is undergoing major changes in all spheres, especially in curriculum, textbooks, teaching methodologies, management and teacher training. No educational reform will succeed without a fully competent teaching force. In Vietnam the teaching force determines the quality of education in general and of teaching-learning activities in particular. For this reason, teacher training, now more than ever, plays a vital role in producing effective teachers for the on-going educational renovation program.

Additional training for teachers in Vietnam is mainly self-training or teacher development as in other countries which are often put in close combination with short-term intensive training courses during the school year or summer vacation with the help of teacher trainers or key teachers and curriculum writers. The additional training of general school teachers and kindergarten teachers is done under the following programs:

- Standard-targeted training is aimed at enabling those under-standard (under-qualified) teachers to reach the standards as set by the MOET for each level. For example, the standard training level is normal school education for kindergarten and primary school teachers; college education for lower secondary school teachers and higher education for upper secondary teachers.

- Periodic training is a kind of training periodically provided to update teachers on new information about educational policies, plans or new knowledge of the curriculum or teaching methodology.

- Above-standard training is provided for those teachers who have the need to be upgraded above the standards set by the MOET and it is mainly aimed at meeting the needs for pioneering training 10-15 years in the future.

- New textbook targeted training is a form of additional training provided for teachers when there are changes in the curriculum, subject matter content, textbooks or teaching methodology. This additional training is mainly given before a new school year to enable teachers to acquire new skills and update their knowledge of a new curriculum, textbooks, teaching methods and pedagogical competencies.

b) Issues and problems about teachers and teacher education

There are several major problems facing the education system in Vietnam. They relate to the number of teachers, their qualification, and teacher education (Nguyen Thanh Hoan 2008 and S. W. Director 2006).

- The number of teachers have increased significantly in general school and kindergarten year by year (for instance, an annual addition of 23,476 from school year 1999 to school year 2002 but severe shortages of teachers exist in all levels of education as well as in different

subjects (see appendix).

- The problem of poor qualification of teachers (under-standard teachers) comes in the following forms: poor self-knowledge, subject knowledge and knowledge of students in a multicultural, multi-religious context ; low managerial skill and poor pedagogical competence; lack of reflection and the ability to be self-critical, the hallmark of teacher professionalism.

In addition, teacher education suffers from the following problems:

- Teacher training institutions are poorly equipped with outdated facilities and training methods and lack systematically and scientifically written training materials; great mismatch between the demand for expansion in size and improvements in quality; contradiction between training needs and the existing capacity of the training system.

- Lack of policy for supporting deserving students and a suitable mechanism for the recruitment of high-quality students into the teaching profession; slack management of graduates (who were provided with scholarships during the learning process but some quit the teaching profession).

- Poor and non-diverse content of teacher education programs ; main focus of training programs on theory not on practical skills; failure to diversify training forms (induction training, school-based in-service training and teacher development); lack of a follow-up new in-service teacher after graduation.

- Lack of updated research about education; Academic inbreeding, thus inhibiting a dynamic research environment; lack of institutional research infrastructure at the university level.

- Lack of clearly articulated and coordinated student learning outcomes at the institutional, departmental, program, and course levels; Institutional effectiveness not evaluated in terms of student learning. As a result, faculty have little motivation since few incentives or rewards are given for change; program and course quality not based on evaluation of student learning.

c) Some major solutions in teacher training

The solutions to the problems of teacher training in Vietnam are based on the country's Strategy for Educational Development (2001-2010). Under this strategy plan, the government is undertaking the following initiatives to improve teacher training:

- Develop a network of about 90 teacher training institutions with a sufficient number of good teacher educators with modern facilities and equipment.

- Build two key teacher training universities to train high quality teachers and undertake research in educational training and science. One in Ha noi (Ha noi University of Education) and the other one at Ho Chi Minh city (University of Pedagogy).

- Allot more funds for the strengthening and upgrading of existing teacher training institutions in ethnic and highland areas and make sure that each province or city will have one multi-system teacher-training college with professionally-upgraded lecturers. Continue to study and formulate remuneration systems and policies toward teachers.

The Strategy for Educational Development (2001-2010) stems from the objective of achieving education for all under the 2001-2010 National Strategy for Socio-Economic

Development, a strategy plan for national industrialization and modernization by 2020. The Strategy for Educational Development (2001-2010) has the following guiding principles, among others:

- Education as a top national policy.
- Develop a Vietnamese popular, national and modern education.
- Education as a common cause for the State and all people.

It has the following over-all goals and objectives:

- Give priority to improving the quality of human resource training and development.
- Accelerate the pace of providing universal lower secondary education.
- Renovate educational goals, objectives, contents and curriculum: the educational goals, objectives, contents and curriculum must be renewed toward standardization, modernization and reaching the higher levels of other countries in the region and the world. They must meet the requirements of human resource development in the socio-economic spheres of the whole country, of each area and of each locality.

- The following principles of education must be implemented: study must go hand in hand with practice; education must be combined with productive work, theory must be linked to reality; school education must be combined with education in the home and society. Teaching and learning equipments, laboratories, etc. must be upgraded.

- Develop teaching staff and renovate teaching methodology: the teaching and educational methodology must be renovated and modernized from teaching students to absorb knowledge actively to guiding them to take the initiative to think and teaching them self-learning methods. The teacher-training program should be renovated with great importance attached to training them to keep up and improve the moral qualities of the teacher.

The MOET has pointed out the direction for teaching staff development:

- At the pre-primary level: Train a sufficient number of pre-primary teachers to meet the demands of public and non-public nurseries and kindergartens for teachers; move closer to standardizing pre-primary teachers.

- At the general education level: Readjust the structure of general school teachers; increase the number of teachers for such subjects as music and painting (arts), physical education, home economics and career-oriented education with a view to diversifying the learning activity and other activities of students toward learning in two-sessions a day. This means students must learn both in the morning and in the afternoon. Step by step upgrading of primary teachers to college-level teacher education; strive to help all lower secondary school teachers to have college-level education by 2005 and heads and deputy-heads of disciplinary groups to have university-level teacher education; upgrade 10% of upper secondary teachers to master's degree education by 2010; train and retrain a contingent of teaching staff sufficient in quantity and quality and professionally qualified to meet the demands and requirements of the newly-renovated curriculum and textbooks of all levels, especially for remote and inaccessible areas; start to improve the quality of teaching staff at the initial or pre-service training through some projects of training teachers for both primary and lower secondary education funded by the

World Bank and the Asian Development Bank ; strengthen and expand the system of teacher-training departments and facilities in localities ; improve the quality of the additional training or in-service training of teachers with a primary focus on some such key topics such as teaching methodology, IT applications, improvement in the quality of teaching practice, and enhanced teachers' capability to apply IT in education ; renovate and modernize teaching methodology with a focus on such approaches as learner-centered, problem-solving and cooperative learning in order to develop learners' thinking skills, critical thinking and creativity, as well as with a stronger emphasis on practical skills, experimental skills and the problem-solving skills of student teachers in pre-service education ; renew the evaluation and assessment of teacher training by increasing oral examinations, using more tests and constructing databanks of examination questionnaires.

The above mentioned solutions are accompanied by the following policies:

- Complete and perfect the existing remuneration system and policies for teachers to make sure that most teachers can be ensured the necessary conditions to teach well, especially towards those in remote, mountainous and inaccessible areas by establishing a system of economic and social incentives to encourage expert teachers to remain in the teaching profession.
- Formulate new and more appropriate preferential policies for teachers, especially for pre-primary teachers and those in rural, mountainous, remote and inaccessible areas.
- Develop new selection or enrolment procedures to enter the teaching profession (including provision of scholarships and arrangement of jobs for novice teachers after graduation).

3. Teacher training at the University of Education, VNU

The University of Education has its former name the Faculty of Education, which was established in 1999. On April 3rd, the Prime Minister of the Vietnamese Government signed Decision number 441/QĐ-TTg to develop the Faculty into the University of Education. On 21th December, 1999, the Faculty of Education (the predecessor of the University of Education) was officially founded under Decision No. 1481/TCCB made by the President of VNU. The foundation of the Faculty marks the birth of a new model of training in the history of Vietnam's educational science - a progressive model in a high-quality, multi-disciplinary university.

In recognition for and for the further development of the piloted model of training, the Government's Prime Minister signed Decision No. 441/QĐ-TTg dated 4th April, 2009 on the foundation of the University of Education from the Faculty of Education, thus becoming one of VNU's six university members.

The University of Education is experimenting with two new models of educating secondary school teachers: “3 plus 1” and “4 plus 1”. The “3 plus 1” model is designed for students who for the first three years follow basic study units at either the University of Natural Sciences or the University of Social Sciences and Humanities, and who for the last year are provided with pedagogical knowledge, skills and teaching practice at the University of Education, VNU. The “4 plus 1” model is for B.A./B.Sc holders registered with the University of Education for one year to

be offered pedagogical knowledge, skills and teaching practice.

The University of Education has three Faculties, five Centers and four Departments to implement its functions as a research and teaching organization. The University is managed by a Rector Board and Science & Academic Committee under the direction of Vietnam National University in Hanoi.

It is now one of the Universities of Vietnam National University, Hanoi – the largest Research University in Vietnam under the leadership of Vietnam's Prime Minister. The University is the first and the leading institution in educational research, in reforming and preparing highly qualified teachers, college and university lecturers and leaders in Vietnam. It has a strong teaching, research, and administrative staff, a diverse body of students and strong domestic and international cooperation with different outstanding world universities and research institutions.

Nguyen Thi My Loc (2008) has pointed out: "In the context of a world filled with ample opportunities and challenges, an important mission that weighs on the shoulders of the educational sector – including the University of Education, VNU is to educate a young, energetic, talented generation – those able to take advantage of opportunities, and overcome challenges to accumulate knowledge and develop the ability to decide the destiny of the whole nation"(XX). and she has also emphasized: "to achieve this noble mission, with the open model of training, the University has been establishing cooperations with prestigious institutions at home and abroad in an attempt to inherit and develop education in Vietnam in particular and the world in general"(xx).

In order to train highly qualified teachers³ as « educators for tomorrow », in addition to the solution pointed out by the MOET, the University of Education, VNU has defined the following prioritized directions (Nguyen Thi My Loc, 2008):

- Carry out research projects and activities in educational fields from theory to practice (within and outside Vietnam), to find and create new knowledge and skills, to learn from other countries to enhance educational quality in general and teacher education in particular.
- Implement and disseminate educational knowledge to promote the effectiveness of teaching and learning methods, assessment and evaluation in education.
- Promote and expand cooperation with teaching and research institutions across the country, in the region and in the world.
- Consult government leaders about strategic development issues in education, measures and policies, and to tie research with instruction and production as well as with science- technology.

³ Our teachers as our University's products will be: a) new pedagogues who will be equipped with creative teaching methods so that they are able to develop the potential of students; b) new educators who are able to develop 21st century skills for students and educate them to be global citizens; c) ICT Users, who have ICT skills so that they can apply technology in their teaching and professional development as well as in their everyday life and educate students in ICT skills; d) researchers, who study and understand well new trends in education in the 21st century and apply the newest research data in their teaching ; and e) community activists, who take part actively in community life to bring community to the school and promote education within the community. (Nguyen Thi My Loc, 2008)

- Promote and implement favorable conditions for research such as : conduct and co-organize workshops, conferences and research projects with other institutions in the world and within Vietnam to advance teaching and learning methodologies and educational management; conduct research in the new areas of educational development: future education, e-learning and ICT education, 21st century educational leadership competencies and human competitive competences; undertake research to impact on general education policies and practices of the National Education System ; conduct research on Vietnamese education and international education and perspectives of Vietnam's education.

- Organize short training courses for teachers, educators and educational managers of the University to upgrade their professional knowledge and skills. Organize joint graduate and post-graduate programs in order to enhance the research quality of the University's staff.

- Create an ICT environment for teachers to teach and for students to learn effectively and creatively (a computer for each lecturer, e-library, e-learning courses, high speed internet access, video conference, etc) ; develop and use e-learning courses so that students of our College can learn everywhere and any time based on their needs ; create an e- learning environment to bring online learning programs to Vietnam to widen international education access for everyone.

- Develop full credit programs and import high quality programs from international higher education institutions.

4. Conclusion

An important goal for Vietnam's socio-economic development in the coming years is: "Lay the foundations for accelerating industrialization, modernization and development of knowledge economy".⁴ That is, to continuously increase the knowledge content in all socioeconomic development activities, and to bring about fundamental changes in education and training. Many Vietnamese educational policy makers and managers believe that the education system that Vietnam expects must be an open education system which is easily accessible by everyone; an education system which nurtures and promotes the creativity of young people, with educational institutions - primarily universities - as cradles of science and technology innovation; an education system closely linked with science and technology progress, especially information technology and telecommunication, in order to continuously renovate but preserve stability; and an education system which promotes competition among various educational institutions to improve the quality and to gradually raise Vietnam's regional and international status through cooperation and competition with foreign educational institutions. Moving towards such an education system is not only the challenge but also the opportunity for Vietnam and future success will be dependent on the policy-maker's sensitivity to new factors and the capacity for carrying out renovation within the current context, as well as the efforts made by teaching staff,

⁴ Report on the Directions and Tasks for 5-year Socio-Economic Development for the 2006-2010 period, presented at the 10th Congress of the Vietnamese Communist Party.

educational managers, parents, students and the entire society(World Bank, 2006).

Teacher training in Vietnam is facing many challenges undergoing great changes in the context of globalisation. This paper has identified some characteristics of the Vietnamese educational system and in particular teacher training at the university level and has suggested some solutions to enhance the quality of training teacher. New up-to-date contents implemented in a digital and open environment with new methods of teaching and learning and assesment will be needed at every university of education in Vietnam. This is the only way for Vietnamese education in general and teacher education in particular to meet global standards. In this process, the University of Education, VNU would like to contribute further to enhancing teacher training quality Its experience and expertise in the field could be useful and merits consideration in order to apply on a larger scale in Vietnam.

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Appendices

Appendix 1. Number of teachers in Vietnam

The proportion of teachers who are women is high in Vietnam in pre-tertiary education. It is highest at the pre-primary level (100 per cent) and at the primary level (77 per cent) and then gets smaller as one moves up the education ladder. But even in upper secondary education, about half of the teachers in the 2002-2003 school year were female.

The teacher-class ratios at all levels of education have been slightly increased and have not yet reached the national standard. The student-teacher ratio at each level has declined considerably, reaching the national standard.

There are significant imbalances in the teacher-class ratios among areas and levels of education. These ratios are the lowest in the Central Highlands and the Mekong River Delta.

At the primary level, the teacher-class ratios are very low in remote, highland and inaccessible areas such as Central Highlands, Mekong River delta, North Central (only 1.02 [1999] and 0.09 [2002]). This ratio is high in areas of the Red River Delta and Southern Delta 1.25 (1999) and 1.14 (2002).

At the lower secondary level, the teacher/class ratio is very low in remote, highland and inaccessible areas such as the Central Highlands and the Mekong River delta (only 1.41 and 1.42) while this ratio is high in urban areas (1.84 and 1.65).

At the upper secondary level, the teacher/class ratio is similar to the lower secondary level such as 2.13 in the Red River Delta, 1.33 in the Mekong River Delta, 1.50 in the Central Highlands and 1.02 in the Southeast.

Number of teaching staff by school year

<i>1999-2000</i>	<i>2000-2001</i>	<i>2001-2002</i>	<i>Percentage of female(02-03)</i>
96,330	97,576	103,083	100
340,871	437,822	353,804	77
208,849	224,728	243,130	69
65,087	74,189	81,549	55
711,136	744,315	78,566	70.2

Teacher-Class Ratios and Student-Teacher Ratios Compared to National Standard

	<i>Ratio</i>	<i>1999-2000</i>	<i>2000-2001</i>	<i>2001-2002</i>	<i>Standard</i>
Kindergarten education	Teacher-Class	1.13	1.16	1.19	2.0
	Student-Teacher	21.9	21.66	20.57	
Primary education	Teacher-Class	1.06	1.09	1.12	1.5
	Student-Teacher	29.5	28.03	26.32	
Lower Secondary education	Teacher-Class	1.5	1.55	1.58	1.83
	Student-Teacher	27.6	26.32	25.72	
Upper Secondary education	Teacher-Class	1.63	1.64	1.68	2.1
	Student-Teacher	30.3	29.65	28.61	

Teacher-Class Ratios by Region (as of June 2002)

Ref	<i>Area</i>	<i>Kinder-garten</i>	<i>Primary</i>	<i>Lower Secondary</i>	<i>Upper Secondary</i>
1	Northern Uplands	1.18	1.10	1.65	1.66
2	Red River Delta	1.29	1.25	1.84	2.13
3	North Central	1.11	1.09	1.46	1.67
4	Central Coast	1.16	1.09	1.55	1.56
5	Central Highlands	1.10	1.02	1.42	1.50
6	Southeast	1.34	1.14	1.57	1.52
7	Mekong River Delta	1.01	1.09	1.41	1.33

Source: Educational Management Information Centre, MOET, 2002

By level of education

- At the pre-primary level: about 80,000 standard teachers
- At the primary level: 15,157 teachers. This situation is likely more serious since nearly 100,000 in the school year 2002-2003 are unqualified to meet the requirements set for teaching the new textbooks of grades 1 and 6
- At the lower secondary level: 15,157 teachers
- At the upper secondary level: 2,297 teachers.

By subject (indicating a great imbalance in teacher training):

- Teachers for technical education: 19,000
- Foreign languages teachers: 20,000
- Physical education teachers: 16,000
- Music and painting teachers: 29,000.

Appendix 2. Content in Methodology for high school mathematics teachers in Vietnam⁵

Methodology of teaching and learning mathematics as a subject

1. Objects and goals
 2. Scientific characteristics
 3. Relative sciences
 4. Method of study
- Questions and exercises

Orientation of teaching mathematics and learning mathematic processes

1. General objectives of the subject “Mathematics”
 2. Educational principles on the subject “Mathematics”
 3. Teaching and learning principles applied to the subject “Mathematics”
- Questions and exercises

Content of the subject Mathematics

1. Educational content of Mathematics
2. Content of Mathematics
3. Curriculum of Mathematics at higher secondary school
 - Session “Natural science”
 - Session “Social and human sciences”
 - Session “Elementary”
4. Essential ideas
5. Content of Mathematics and student activities

Questions and exercises

Methodology of teaching and learning mathematics

1. Notion on methodology of teaching and learning
2. Generality about different methodologies of teaching and learning
3. Traditional methodologies applied to the process of teaching and learning Mathematics
4. Need and orientation to renovate teaching and learning methodology
5. Essential components of teaching and learning methodology
6. Functionalities guiding the teaching and learning process

Questions and exercises

Non-traditional tendencies on teaching and learning

1. Teaching and learning based on problem solving
2. Sketches about the theory of the situation
3. Teaching and learning by programming
4. Teaching and learning by division
5. To develop and to use teaching and learning technologies

⁵ Nguyen Ba Kim (2004), *Methodology in teaching mathematics at high school in Vietnam*, Educational Publishing House, Ha noi, Vietnam.

Questions and exercises

Assessment of the student learning process

1. Generality of assessment
2. Elementary notions on assessment
3. Different kinds of assessment processes
4. Techniques of the assessment process
5. QCM

Questions and exercises

Typical situations for the teaching and learning of Mathematics

1. Teaching and learning a mathematic notion
2. Teaching and learning a mathematic theorem
3. Teaching and learning a rule, a method
4. Teaching and learning a resolution of a mathematic problem

Questions and exercises

Teaching and learning means in Mathematics

1. Generality of teaching and learning means
2. Using teaching and learning means
3. Using IT as a teaching and learning mean

Questions and exercises

Teaching and learning planning

1. School year planning
2. Lesson planning

Questions and exercises

Appendix 3. Content developed in Master syllabus named “Methodology of teaching and learning Mathematics at secondary school” at the University of Education, VNU⁶

Objectives

Knowledge:

- Provide students with basic, modern knowledge of mathematics teaching theory and methods
- Provide students with modern mathematic knowledge.

Skills:

- Develop skills of building programs for mathematics;
- Develop skills of implementing and renovating teaching methods of mathematics.

Other competencies:

- Develop an ability for strategic planning of mathematics instruction (curriculum development; assessment in instruction; organizing instructional process).

⁶ Cof. <http://eduf.vnu.edu.vn>

- Develop ability to solve problems in the process of renovating teaching methods.
- Develop technological and modern teaching and learning resources in education teaching and research.
- Develop the ability of excellent mathematics teaching in higher secondary school, vocational and higher education and more advanced levels.

Research:

- Initiate in renovating teaching methods and to solve problems in the renovation of teaching methods for mathematics.
- Implementing education research and teaching methods of mathematics and in mathematic related areas.

Degree certificate and entrance exams

1. Degree certificate

- + Vietnamese: Thạc sĩ Sư phạm Toán.
- + English: Master of Mathematics Education.

2. Entrance exams

Basic exam: Teaching theory.

Foundation exam: Analyse

Foreign language: level B of one of five languages: English, Russian, French, Chinese and German.

Program volume

97 credits, including:

Philosophy:	04 credits
General foreign language:	04 credits
Professional foreign language:	03 credits
Foundation and Specialization:	38 credits
Core subjects:	32 credits
Optional subjects:	6/18 credits
Thesis:	10 credits