PROPOSAL FOR A MODEL PROGRAM OF SCIENCE TEACHER EDUCATION IN VIETNAM

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This is to certify that the

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ABSTRACT

PROPOSAL FOR A MODEL PROGRAM
OF SCIENCE TEACHER EDUCATION
IN VIETNAM

By

Phan Mỹ-Linh

Purpose

The purpose of this study is to design a science teacher education program which will provide prospective teachers necessary skills and knowledge to assume the task of modern science teaching in Vietnamese secondary schools.

Methodology

For this purpose, the following processes were employed:

(1) Documentary analysis of current science teacher education programs in Vietnam, in comparison with that of some other countries in South-East Asia: The Philippines, Thailand, and Indonesia;

(2) Library research study of principles and assumptions which might be used for planning a sound teacher education program for Vietnam;

(3) Formulation of objectives, and design of a proposed model science teacher education program, appropriate to the existing Vietnamese institutions' condition and situation.

Findings

The criteria of an effective science teacher education program that evolved out of the documentary research and analysis are as follows:

1. The curriculum should be at least a four-year program.
2. Teachers should be broadly and liberally educated.
3. Student teaching should be organized from easy to difficult, from simple to complex.
4. Internship is necessary for the professional and personal growth of the career teachers.
5. Integration between different components of the program should be provided.

From these criteria, the proposed model science teacher program was formulated. It consists of four components which make a total requirement of 140 semester credits: general education (30 per cent), professional education (20 per cent), concentration in major and minor fields (44 per cent), and electives (6 per cent).

The evaluation of the proposed program led to the conclusion that, in this program, more provision for intellectual and professional growth is offered, and the distribution of courses is more rational than in the existing programs of the Faculties of Pedagogy in Saigon and in Cantho.

Recommendations

For the implementation of the proposed model developed in the study, the following recommendations are listed:

1. Supervisors for student-teaching and internship should be selected among qualified and experienced science teachers.
2. To upgrade and update teachers, graduate as well as in-service programs need to be offered through the Faculty of Pedagogy curriculum.
3. To facilitate the evaluation of students' credentials and curricula, a credit system should be adopted.

PROPOSAL FOR A MODEL PROGRAM OF SCIENCE TEACHER EDUCATION IN VIETNAM

By

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CHAPTER I

THE PROBLEM

The Purpose of the Study

The purpose of this study is three-fold:

(1) To investigate science teacher education programs in some South-East Asian countries in order to incorporate their best features in a science teacher education model for Vietnam;

(2) To study principles and assumptions for planning a sound science teacher education program;

(3) To propose a model science teacher education program with regard to the considerations posed in (2), appropriate to the existing Vietnamese institutions' condition and situation.

The Statement of the Problem

This study is stimulated by three following factors:

1. The existing science teacher education programs in all institutions in Vietnam--the faculties of Pedagogy in Saigon, Hue, and Cantho--appear

inadequately relevant to realistic problems of education in the country or even the local region.

2. Science teacher education deals much with quantity production in teacher preparation without concomitant attention to improvement of qualitative standards. The kind and amount of practical experiences that science teachers have received at the pre-service level, the undergraduate level, do not provide them with minimum requirements for cultivation of functional instructional skills. Requirements and standards in the faculties of Pedagogy are not developed relative to organization and administration of curriculum, instructional and administrative personnel; and physical plant and facilities are not adequate for implementing science education programs.

3. The insufficient competent staff and educational budgets to maintain high standards of quality, e.g., the supervision of student teachers, pose difficult problems for adequate review and evaluation of science teacher education programs in terms of long range planning for sound national objectives.

Specifically then, the problem of this study is to design a model secondary school science teacher education program for Vietnam.

Rationale

In 1969, educators from sixteen countries in Asia gathered in Quezon City, Philippines, to discuss and convey their thoughts and ideas in teacher education in their countries.[1] From the overall picture of the existing situation, trends and issues in teacher education that emerged from the discussions in the meeting and the presentations by the participants, the general report came out with the following aims and objectives:

1. That the education of teachers should make them capable not merely of adapting themselves to change but of interpreting it to the people if they are to play their part as community leaders in promoting social betterment and universal human brotherhood. . . .
2. That the specific objectives of the curriculum of teacher education be enunciated in terms of behavior changes and that these be categorized under three broad heads: (1) cognitive, (2) affective, and (3) psychomotor. Such an enunciation could help direct teacher education programs more clearly and closely toward development of desirable understandings, attitudes, skills and abilities. . . .[2]

Focusing especially on science teacher education, the discrepancy between what is desired and the actual problems in preparation of science teachers in developing countries in South East Asia is stimulating. Some of these fundamental problems are:

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[1]Regional Meeting of Teacher Educators in Asia, Curriculum Development in Teacher Education in Asia; Final Report (Bangkok: UNESCO Regional Office for Education in Asia, 1970).

[2]Ibid., p. 6.

1. Inadequacy of teacher education programs and laboratory experiences, both pre-service and in-service.
2. Rigidity of school programs, course content, and methods of teaching.
3. The handicap of using results on state and/or national examinations as the sole basis for promoting pupils and awarding degrees.
4. The dictation of school policy by small groups of administrators.
5. Caliber of students entering the teaching profession.
6. Quality and quantity of science apparatus and the lack of appropriate lists for various courses.
7. Inadequacy of local manufacturing and distribution of science apparatus and supplies.
8. Inadequate facilities in the classroom, laboratory, and libraries.
9. Feeling of complete success upon receiving degree(s) and a government position--teaching fits this category.
10. Ineffective use of native educators who have studied and obtained degrees abroad.

11. Lack of science centers for in-service programs.[3]

These problems are also fundamentally relevant to Vietnam if one is expecting the programs of science teacher education to be more contributive to post-war reconstruction.

Procedure

Teaching science in Vietnamese high schools has long merely consisted of lectures without discussion, demonstration, or laboratory work. Students are asked to listen to their teachers, take notes, memorize facts, and recite them back to their teachers, or even reproduce them on examination.[4]

This method of teaching and learning is no longer adequate with regard to tremendous rapid progress in science and technology. Verbalism, telling, rote learning cannot develop skills nor do they give vocational orientation. Hence, the need to change teacher-centered teaching situations into a more open learning process is urgent and understandable. Current attempts to change science curricula in high schools

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[3]Charles L. Koelsche, "Science Education Programs in the Developing Countries of South and Southeast Asia," Science Education, XLVIII, No. 4 (October, 1964), 349.

[4]Edgar N. Pike, "Public and Private Education in Vietnam," Asian Culture, II, No. 2 (April-June, 1960), 112.

have been initiated,[5] but facing up to the lack of qualified teachers in today's secondary schools for undertaking science education programs reformulated under new objectives, one might emphasize this observation, which is true everywhere:

> . . . the quality and character of our elementary and secondary schools are dependent largely upon the quality and character of teachers who staff them. The teachers, in turn, strongly reflect the strengths and shortcomings of colleges that recruit them and provide initial preparation. . . . If schools must change to meet the challenges of our time, the education of teachers must change as well.[6]

To speed that expected change, the curriculum of science teacher education should not be an accumulation of pieces of courses which are added along as far as the needs in high school require.[7] But, rather, it presents a good balance between the proportion of academic and professional education; it is organized into sequential components and courses in such a way that theory and practice can complement each other, hence provide better professional growth of prospective teachers.

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[5]Bộ Giáo-dục, Chương-Trình Trung-học (1970) [Ministry of Education, Secondary Education Curriculum] (Saigon: Bộ Giáo-dục, 1970).

[6]George W. Denemark, "Teacher Education: Repair, Reform, or Revolution?" Educational Leadership, XXVII, No. 6 (March, 1970), 539.

[7]L. W. Lewis, "Getting Good Teachers for Developing Countries," International Review of Education, XVI, No. 4 (1970), 399.

This study follows these steps:

1. The description of current programs of science teacher education in some developing countries in Southeast-Asia, i.e., Thailand, Indonesia, the Philippines;
2. A review of the history and development of teacher education in Vietnam;
3. A description and analysis of contemporary science teacher education in Vietnam regarding selection and admission of students, academic and professional programs, and student teaching;
4. A formulation of desirable characteristics for Vietnamese science teacher education;
5. A formulation of a proposed model program of science teacher education in Vietnam based on the previous four items.

The Sources of Data

This study is descriptive and involves no hypothesis testing. The data sources for this research consist of: (1) publications of the United Nations Educational, Scientific and Cultural Organization, (2) publications of the United States Department of Health, Education and Welfare, Educational Resources Information Center (ERIC), (3) pamphlets and reports published by

the United States Agency for International Development, Mission to Vietnam, Saigon, (4) programs of teacher education of the Faculties of Pedagogy in Saigon and Cantho, (5) publications of the Ministry of Education in Vietnam and the Ministries of Education in different relevant countries, (6) research studies in Asian teacher education curriculum, and (7) related literature pertaining to teacher education in general.

Definition of Terms

To better convey connotations throughout this study, the following terms are defined for such a purpose:

Teacher Education. Within the context of this study, teacher education has a meaning slightly different from teacher training. It denotes all the processes of, beside helping qualify a person to undertake the responsibility involved in the teaching job, educating him, i.e., providing him the basis for the growth of his intellectual life, helping him develop attitudes and abilities of positive values to live in his society.

Cooperating Teacher. A teacher of school pupils who is given the responsibility of directing the work of a student teacher with the same pupils.[8]

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[8]Jim Johnson and Floyd Perry, Readings in Student Teaching (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1969), p. 15.

College Supervisor. "A regular college staff member who has as a part or all his assigned work load the supervision of the activities of student teachers and the relationships and conditions under which these students carry on their work."[9]

Internship. An integral part of professional education of teachers, having been preceded by successful observation, participation, student teaching. In it the student is exposed to teacher duties under appropriate supervision and guidance for the purpose of making the transition from his college life to teaching a continuous process of growth and development.

Integration. The process or practice of combining different school subjects and presenting them as aspects of one unifying project or activity.[10]

First Cycle of Secondary Education. The period of education, in Vietnam, extending from grade seven to grade four (which is equivalent to grade six to grade nine in the American school system).

Second Cycle of Secondary Education. The period of education, in Vietnam, extending from grade three to

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[9] Ibid.

[10] Good, Dictionary of Education, p. 221.

grade one (which is equivalent to grade ten to grade twelve in the American school system).

Science Education. The activities and experiences by which the individual is helped to develop necessary intellectual resources (including necessary factual information), values, attitudes, and inquiry skills which promote in him the ability to interpret experience within frameworks of theory and practice, to understand the interrelationships between science and technology, and other facets of society, including social and economic development.

Overview of the Study

Subsequent chapters, as listed below, delineate procedures, conclusions, and recommendations developed in this study.

Chapter II is a review of the literature pertaining to current trends in teacher education in Asia, and to teacher education in Vietnam.

Chapter III is a comparative study consisting of brief descriptions, as well as current and proposed revisions of teacher education in Southeast Asian countries and Vietnam. Emphasis is given to the status of teacher education in Vietnam, including its historical development and science teacher education programs.

Chapter IV takes into account current trends in teacher education; the proposed model program of science teacher education is presented with regard to assumptions of effective science teacher programs.

Finally, the summary of the findings and the recommendations for implementation of the proposed model program of science teacher education are included as Chapter V.

Limitation of the Study

Because of the difficulty of getting materials from abroad, especially the current ones, this study is restricted (1) for Vietnam, to the analysis of teacher education programs of uniquely two faculties: the Faculty of Pedagogy in Saigon and the Faculty of Pedagogy in Cantho, (2) for other Southeast Asian countries, to only the study of the nearest programs that the writer has at hand.

CHAPTER II

REVIEW OF THE LITERATURE

The objective of this chapter is to review the studies and/or research relevant to this dissertation. The chapter consists of two separate parts, one part dealing with teacher education in Asia and the other with Vietnam.

Literature Related to Current Trends in Teacher Education in Asia

The Final Report of the Regional Meeting of Teacher Educators in Asia[1]

The report consists of three sections: (1) A general survey of teacher education in Asia with suggestions for improvement, (2) Summaries of speeches delivered at the opening sessions with a list of conference participants, and (3) A guide for curriculum development recommended by the conference.

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[1] Curriculum Development in Teacher Education in Asia (Bangkok: UNESCO Regional Office for Education in Asia, 1970).

In the first section of the report is included a discussion of suggestions for curriculum development in teacher education.

First, the Report suggests six criteria listed as principles of curriculum development. They are: (1) balance between general and professional education, (2) practical experience, (3) the role of cooperating schools, (4) new methods and techniques in teacher education, (5) methods of evaluation, and (6) research and experimentation in curriculum. The Meeting recommended that the curriculum for the preparation of teachers include "courses which are (a) general, for the purpose of a broad, liberal education of the individual, (b) academic, which mainly aims at increasing competence in content areas, and (c) professional, which includes theoretical studies as well as practical experiences."[2] The recommendation, that 40 per cent to 60 per cent of the total curriculum requirements should constitute professional courses, including practical experience (50 per cent of the professional courses are required to cover practical experience of the teacher's work), appears more ideal than practical. It seems that teachers need to increase their competencies in content areas, and that the requirement for professional courses is inappropriate

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[2] Ibid., p. 7.

in maintaining a good balance between, on one side, general and academic education, and, on the other side, professional education.

Second, the meeting recommends that the division of the school program into primary and secondary should be discarded as there is a growing trend to consider the entire period of schooling as one continuous unit. "Hence, the need for a common teacher education program to cover both primary and secondary school teachers together,"[3] is desirable.

Finally, the Meeting suggests that a sound integrated curriculum might include the following subject areas:

I. Foundations of Education: philosophical; psychological; social
II. Teaching materials and methods, evaluation, and research
III. School organization and administration
IV. Student teaching
V. Community and adult education
VI. Health and physical education
VII. Practical arts
VIII. Education for recreation and leisure[4]

An outline of course content in each subject is presented in Appendix B.

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[3] Ibid., p. 11.

[4] Ibid., p. 13.

In the last section of the Report, the formulation of general objectives for teacher education as well as objectives of each subject area is worthy of consideration.

Courses which deal with the foundations of education would create interest in student teachers as they are mastering their future role and duty in schools. Man's insights are deeply influenced by educational processes--teaching-learning processes--and by social interactions, particularly within his peer group. This is the concept upon which the Meeting emphasizes the importance of philosophical education, and social foundations of education.[5]

Courses in teaching materials and methods, evaluation and research would enable teachers to make a more valuable contribution toward achieving the objectives of education. The objectives of these courses are to help student teachers acquire familiarity with the use of instructional media available to them; the use of different methods and techniques of teaching that would offer the pupils opportunities to develop their learning aspirations and needs; the types and ways of evaluating the outcomes of educational processes and

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[5] Ibid., pp. 39ff.

programs as well as of the student's achievement; and finally, the procedure through which surveys and studies should be conducted for improving teacher education.[6]

Courses in school organization and administration are found essentially practical, as far as science teachers have responsibility too, to school management and governance, and to other special roles in the fulfillment of the national goals for education, i.e., curriculum planning and manpower development planning. The outlines of these courses are found also relevant to the proposed model program for science teacher education in Vietnam.[7]

Little comment seems necessary on the statements of the objectives of courses in student teaching but it would be relevant to work out a student teaching program to implement the Meeting's recommendations on (1) the scope, (2) the stages, (3) the organization, and (4) the supervision and evaluation of student teaching programs.[8]

Recommendations concerning courses in the last three subject areas might be used to design a sound program in science teacher education, if one did not wish that program to remain literary and theoretical.

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[6] Ibid., pp. 49ff.

[7] Ibid., pp. 55ff.

[8] Ibid., pp. 59ff.

Elementary School Teacher Education for the Republic of Vietnam[9]

In this dissertation, a two-year college program of elementary teacher education is proposed. This proposed program consists of 120 quarter-hour credits or approximately two and a half years of intensive study, and includes 3 components: (a) professional education, 50 per cent, (b) general education as guided electives, 25 per cent and (c) community education, 25 per cent.[10]

The program is intended to serve as a first step in moving toward the establishment of a junior college, since the author hopes that, in the general steps, the program will lead eventually to four years of college with more general education and subject specialization.

One of the author's proposals found relevant to this study is the use of a wide array of public elementary classrooms throughout the country as laboratory schools. It is believed that current laboratory schools organized within a college or school of education for such a purpose cannot present the real problems faced by elementary--or even secondary--teachers in the country.

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[9]Bông Q. Nguyên, "Elementary School Teacher Education for the Republic of Vietnam" (unpublished Ed.D. dissertation, George Peabody College for Teachers, 1967).

[10]Ibid., p. 190.

Finally, also found pertinent to this research is the recommendation for the involvement of student teachers in a period of full-time contact with children and adults in the community.

Program for the Preparation of Elementary Teacher Educators in Vietnam[11]

The author of this study has concern over major problems of Vietnamese education, i.e., inadequate training of elementary school teachers, lack of qualified teacher education staff, challenge for change in education. Thus, the study deals with the proposal of a one-year professional program to provide pre-service training for qualified individuals to become normal school instructors and/or to prepare them for other leadership positions in elementary education.

The study is found relevant to this dissertation in regard to the following features:

1. The analysis of geographical, historical, and social factors which have influenced Vietnamese education; the details given in this analysis will be most useful for designing an appropriate program of science teacher education, as far as basic knowledge in science is concerned.

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[11]Khánh H. Đoàn, "A Proposed Program for the Preparation of Elementary Teacher Educators in Vietnam" (unpublished Ph.D. dissertation, The University of New Mexico, 1968).

2. The four interrelated parts of the program focusing on professional knowledge in philosophy of education, psychological foundations of curriculum, principles and methods of teaching, and research methodology.

Review of Ohio Report[12]

The Ohio University team has made several reports concerning its activity progress and program development in Vietnam as pertinent to science teaching and teacher education programs.

In these reports, the following has been noted:

1. At the Faculty of Pedagogy in Saigon, a new course in science teaching which "exemplifies effective procedures with limited facilities," has been recently introduced into the teacher education program (Report of July 1, 1967--January 1, 1968, p. 31);

2. Action has been taken (Report of July 1, 1967--January 1, 1968, p. 68) to develop in Cantho a demonstration high school attached to the Faculty of Pedagogy for the purpose of "serv[ing] as a model for the comprehensive secondary education concept";

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[12] Ohio University Contract, USAID/Education, Semi-Annual Report, USAID Education Division, Teacher Training. (Mimeographed.)

3. To respond to the urgent needs in schools, a design of a "crash program," for the production of an addition of 500 first-cycle secondary school teachers, has been developed (Report of January 1--July 1, 1967, pp. 16f);

4. It has been suggested (Report of July 1, 1967--January 1, 1968, p. 34) that Faculties of Pedagogy "should be equipped in science in a way to serve as examples for the secondary schools to follow."

5. For the purpose of "broadening the base of selection of students" to teacher education programs, suggestions have also been made that the admission requirement for the first year at the Faculty of Pedagogy should be based not on the Propaedeutic Certificate but on the Baccalaureat II (Report of January 1--July 1, 1968, pp. 14f);

6. It has been also mentioned (Report of July 1, 1967--January 1, 1968, pp. 133ff) that the science workshop at Cantho in July, 1967, has had a great effect on the learning and education of teachers: it encouraged more participation, freer exchange of ideas among participants and again, it made the university aware of its role

and responsibility for providing a broader education to future science teachers;

7. Attempt has been made, at the Faculty of Pedagogy in Cantho, to "incorporate related aspects of guidance into the educational psychology courses," but because of the non-availability of professors in the subject field, the plan has not been realized (Report of January 1--July 1, 1968, p. 42).

Summary of the Chapter

In this chapter, the review of related literature points out: (1) the present tendencies in improving teacher education in Asian countries and Vietnam, (2) the trends in designing a proposed teacher education program with three traditional components: general education, professional education including student teaching, and concentration in the content of teaching areas, and (3) emphasis on professional education.

CHAPTER III

THE COMPARATIVE STUDY

The purpose of the chapter is three-fold: (1) to describe teacher education in the following Southeast Asian countries: Thailand, Indonesia, and the Philippines, and (2) to describe teacher education in Vietnam with regard to its (a) historical development, and (b) programs for science teacher education.

The analysis of the present programs of science teacher education constitutes the major emphasis of this chapter.

Teacher Education in Southeast Asia

Teacher Education in the Philippines

Teacher education in the Philippines, deeply influenced by a long colonial history and nationalistic trends, indicates a strong will to develop moral character, personal discipline, civic conscience, and vocational efficiency, and to teach duties of citizenship. It has been harmoniously developed within the national educational

system. Summarily, the Philippine education system, as outlined in Figure 3.1, consists of two levels of control. State colleges, state universities, and other state institutions report directly to the President of the Philippines, and have only professional relationships with the Department of Education. The Department of Education has only the authority over all elementary, secondary, normal, technical, special vocational schools, as well as private colleges and/or universities.

Goals and Objectives of Teacher Education. The government undertakes the education and the training of teachers for elementary and secondary schools, and junior colleges as well. Secondary teacher education programs are offered in teachers colleges and schools or colleges of education in state universities.

The formulation of objectives of teacher education in the Philippines may be stated differently from one institution to another; but for the whole national system, the National Board of Education has formulated the following:

1. To inculcate moral and spiritual values inspired by an abiding faith in God;
2. To develop an enlightened, patriotic, useful, and upright citizenry in a democratic society;

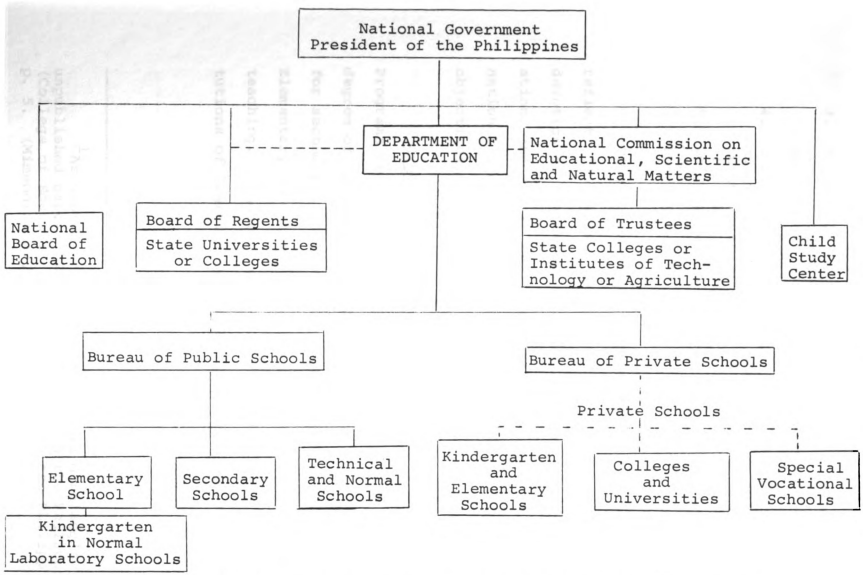

Figure 3.1.--The control and regulation of the school system by the State.

Source: Florencio P. Fresnoza and Canuto P. Casin, Essentials of Philippine Educational Systems (rev. ed.; Manila: Abiva Publishing House, Inc., 1964), p. 39.

3. To instill habits of industry and thrift, and to prepare individuals to contribute to the economic development and wise conservation of the nation's natural resources;
4. To maintain family solidarity, to improve community life, to perpetuate all that is desirable in our national heritage and to serve the cause of world peace;
5. To promote the sciences, art, and letters for the enrichment of life and the recognition of the human person.[1]

These general objectives, among many others, reflect (1) eminent aims for the citizenry, (2) an entire devotion to teacher preparation as professional preparation, and (3) an awareness and willingness to achieve national socio-economic goals as a part of educational objectives.

Organization of Teacher Education Programs.

Programs of Teacher Education usually lead to the degree of Bachelor of Science in Education (B.S.E.) for secondary school teaching, and Bachelor of Science in Elementary Education (B.S.E.Ed.) for elementary school teaching. "These programs are offered either at institutions of learning recognized by, and subject to, the

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[1]As quoted in Professor Priscila Manalang's unpublished paper, "Teacher Education in the Philippines" (College of Education, The University of the Philippines), p. 5. (Mimeographed, 29p.)

Department of Education, or in colleges of education which are units of universities, or in state colleges operating under their own charters."[2] Bachelor degrees for vocational education, with fields of teaching specialization, are also offered through the above mentioned colleges or schools of education.[3] Advanced degree programs (master's and doctoral) in teacher education are developed within few colleges of education in state universities.

In addition, private institutions in teacher education contribute as much as 10 per cent of the total annual national teacher-graduates. However, the evaluation of their programs made on the national level may be summarized in these terms.

> The private institutions, on the other hand, present a different type of problem because they are largely profit-making organizations. Consequently they concentrate on fields of study which involve less expense, and correspondingly neglect costly technical, vocational and scientific courses urgently

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[2] Ibid., p. 7.

[3] Raymond G. Bass, "Teacher Training in New South Wales and the Philippines," The Education Quarterly, XIII, Nos. 2 and 3 (October, 1965-January, 1966), 70.

> needed for development purposes. While there is some attempt at state supervision and regulation of these private institutions, it is generally ineffective.[4]

Structure of Teacher Education Programs: The B.S.E. Curriculum. The curriculum of the Bachelor of Science in Education (B.S.E.) of the University of the Philippines (Tables 3.1 and 3.2) is an example for such a consideration.

This curriculum is based upon a broad foundation of culture courses given in the College of Arts and Sciences.

> It is assumed that the teachers should have, first of all, and fundamental to all other preparations, a broad and liberal education; second that they should be masters of some special subject or group of subjects which they expect to teach; and, that this training should be supplemented by professional education which will give a new meaning to the subjects of instruction, and a knowledge of the pupil to be taught and the problems to be met.[5]

Hence, students are required to spend their first two under-graduate years in the College of Arts and Sciences and the last two years of undergraduate education in the College of Education. Requirements for admission to the College of Education are determined by the academic records of the students in the College of

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[4] Ibid., p. 13.

[5] The University of the Philippines, General Catalogue 1968-1969, p. 317.

TABLE 3.1.--General Curriculum: Bachelor of Science in Education, College of Education, The University of the Philippines.

First Year			
First Semester (15 units)		Second Semester (15 units)	
English I	(3)	English IV	(3)
English II	(3)	Introduction to Asian Civilization	(3)
English III	(3)	Philippine History and Institutions	(3)
Math I	(3)	Spanish I and II	(6)
Speech I	(3)		
Second Year			
First Semester (18 units)		Second Semester (18 units)	
Humanities I	(3)	Western Thought I	(3)
Natural Sciences I and II	(6)	Western Thought II	(3)
Spanish 12	(3)	Psychology II	(3)
Major	(3)	Spanish 13	(3)
Major	(3)	Major	(3)
		Major	(3)
Third Year			
First Semester (18 units)		Second Semester (18 units)	
History of Education	(3)	Philippine Education	(3)
Educational Psychology	(3)	Philosophy of Education	(3)
Measurement and Evaluation	(3)	Education (Teacher's Course)	(3)
Major	(3)	Professional Ethics	(2)
Major	(3)	Major	(3)
Major	(3)	Major	(3)
		Major	(3)
		Major	(3)
Fourth Year			
First Semester (18 units)		Second Semester (18 units)	
Education 181: Professional Laboratory Requirements	(3)	Philippine Institutions 100	(3)
Elective	(3)	Introduction to Education	(3)
Elective	(3)	Internship	(3)
Major	(3)	Major	(3)
Major	(3)	Major	(3)
Major	(3)	Major	(3)

Source: The University of the Philippines, General Catalog 1968-1969, pp. 318-19.

TABLE 3.2.--Requirements for Bachelor of Science in Education (B.S.E. Curriculum).

	Credits
General Education Program	66
A. Required G.E.	48
B. Electives for Professional Programs (Including Spanish)	18
Major	46
A. Advanced	36
B. Preparatory (G.E.)	10
Minor	12
Philippine Institutions 100	3
Education	19-29
	146 (to 156)

Source: The University of the Philippines, General Catalogue 1968-69, p. 319.

Arts and Sciences, with a general average grade of 2.5 or better in the major fields elected by them (grade point in the Philippine system is reverse from that in many American institutions of higher education; a 1.0 grade corresponds to A, and 5.0 grade corresponds to F (Fail).

Requirements for graduation in the Bachelor of Science in Education (B.S.E.), as listed in Table 3.2, consist of three components: General Education program (G.E.), major and minor, with a sum of 146 to 156 semester credits. The requirements from the University of the Philippines are slightly different from other institutions of teacher education. A general revision indicates that, at the national standard, a secondary teacher education curriculum consists of:

General Education:	69 units
Professional Education:	24 units
Major	36 units
Minor	18 units

Details of the distribution of these requirements are referred to Table 3.3. Both programs reveal that, although almost half of the curriculum is devoted to General Education, about 60 per cent of the requirements in this component are spent in language courses. The large proportion of hours requirements for language in the Philippine teacher education curriculum stems from the language dilemma of the country.

Actually, in the Philippines, Pilipino (derived from Tagalog) is recognized as the national language and, consequently, proficiency in this language is recommended for all prospective teachers. However, this language is spoken only by people living in certain areas. For prospective teachers who do not come from these areas, the learning of Tagalog or Pilipino at a higher level is a problem.

In addition, the prospective teachers are required to have full mastery of English, the language of instruction in all present Philippine schools.

The recent reduction of the requirements for Spanish--from twenty-four units to twelve units--brings about new trends in adding more courses in subject majors to the curriculum.

TABLE 3.3.--The approved B.S.E. Curriculum (1964 Revamp Committee).

A. General Education	Units (Minimum)	Nature of Courses
1. English	18	6 units of Composition; 3 units of Literature; 3 with Elective
2. Pilipino	6	6 units of Composition
3. Spanish	24	(As now prescribed 12)
4. Social Science	12	3 units of Philippine History and Institutions; 3 units of Government; 3 units of Western Thoughts; 3 units of General Psychology
5. Natural Science	10	Two 5-unit Laboratory Courses
6. Mathematics or Philosophy	6	3 units of Elementary Mathematics
7. Physical Education	4	(As now prescribed)
8. Rizal Course	1	(As a separate 1-unit Course)
	81-69	(minus 12 units of Spanish)
B. Professional Education		
1. Introduction to Education	3	(Including Philippine Educational System)
2. Educational Psychology	3	
3. Measurement and Evaluation	3	
4. Secondary Education	3	
5. Student Teaching	6	3 units of Professional Laboratory Experience (on-campus); 3 units of Internship (off-campus)
	24	
Suggested Electives		
1. Philosophy of Education	3	
2. Administration and Supervision	3	
3. Curriculum Development	3	
4. Guidance in the Secondary School	3	

C. Specialization in Major and Minor

36 units shall be required for the major field and 18 units in the minor, except for English and Spanish where more than 36 may be allowed; but at least 24 units are required for the minor in English and 30 units in Spanish.
The computation of the units is the minor and major fields includes the units earned in the general education courses.

D. Requirement for Graduation

General Education	Professional Education	Major	Minor
81	26	36	18

(Including general education units)

Source: Priscila Manalang, "Teacher Education in the Philippines" (unpublished paper), p. 19.

Student Teaching. Student teaching begins with the fourth year. It consists of two periods. "The first period . . . includes orientation, observation and participation, and practice teaching in the campus training school."[6] This period extends for one semester.

The second period involves two sessions, the sessions respectively lasting for four and twelve weeks. During the first session the prospective teachers help evaluate student-teachers' practice-teaching and perform demonstration lessons for the latter. The second session refers to an internship away from the main campus. Four areas are expected to be parts of the off-campus internship program. They are: work with children, work with school personnel, work with community, and written reports. In addition, student-teachers are provided with insight into educational administrative and supervisory processes, and public relations as well, beside other regular programs in teaching practice.

Teacher Education in Thailand

"Teacher education in Thailand has a comparatively brief history."[7] The emergent demands in teacher

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[6]Florencio P. Freshoza and Canuto P. Casium, op. cit., p. 341.

[7]Edward J. Kelly, Henry J. Hermanowick, and Herbert A. Smith, Teacher Education in Thailand: Problems and Prospects (Greely, Colorado: University of Northern Colorado, October, 1971), p. 6. (Mimeographed.)

education for the country became urgent only after World War II, as modern concepts of training teachers at the college level were initiated in 1958 in six different colleges.[8]

Organization of Teacher Education. The organizational structure of teacher education programs is complicated. But, in general, qualifications for teaching are enforced through two main streams.

The Ministry of Education, with all its institutions under its jurisdiction and a national network of teachers colleges, undertakes the training of teachers for different teaching levels: Higher Certificate of Education for general secondary teaching; Diploma of Education, Bachelor of Education; and Master of Education.[9, 10]

In addition, teacher education programs are offered at the faculties of education in the following universities: Chieng-Mai, Chulalongkorn, Kasetstart, Khon Kaen, Silparkorn, and Prince of Songla. These programs all lead to the degree of Bachelor in Education. A Master's degree in education is also offered at the University of Chulalongkorn.

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[8] Ibid., Appendix B, p. 108. [9] Ibid., p. 9.

[10] Howard Hayden, Higher Education and Development in South-East Asia, Vol. 2, Country Profiles (Paris: UNESCO and IAU, 1967), pp. 143-44.

The major levels of teacher qualification are as follows:

TABLE 3.4.--Levels of teacher qualification.

Certification Title	Nature	Requirements
1. Paw Kaw Saw (P.K.S.)	Certificate in Education	2 years of high school (M.S. 1-2) plus 2 years of teacher training
2. Paw Kaw Saw Sung (P.K.S.S.)	Higher Certificate in Education	Paw Kaw Saw plus 2 additional years of teacher training or 5 years of high school (M.S. 1-5) and 2 years of teacher training
3. Bachelor's Degree	B.Ed., B.A., or B.S.Ed.	Completion of an undergraduate collegiate program
4. Graduate Level	Advanced Diploma in Special Fields or M.Ed.	1 year of graduate level of study in a given field for the Advanced Diploma or 2 years of graduate study in an approved program for the Master's degree

Source: Edward J. Kelly, et al., op. cit., p. 15.

Structure of Teacher Education Programs. The Curriculum of Higher Certificate in Education (Paw Kaw Saw Sung) designed for secondary teachers, consists of three components with the requirements distributed as listed in Table 3.5.

Candidates admitted to this program are (1) those who earn the Paw Kaw Saw (Certificate in Education), and

(2) those who earn no certification, but have five years of secondary schooling (Table 3.4).

Thus, in order to provide as much as possible competencies in special fields to their students who do not complete the high-school training, the Paw Kaw Saw's programs intend to concentrate on the major field. (Eighty per cent of the total program is devoted to that training.) However, with this distribution, it appears that there is not much time left in the curriculum for professional preparation. Twenty quarter credits required for professional courses may lead to the following results:

-- Inexperienced and inadequately prepared teachers at the teacher training institutions;

-- Ambiguity and lack of congruency of alleged goals for teacher education with the subject matter and instruction emphasized in the program.[11]

With regard to the curriculum for the bachelor's degree in education, the following comments are noteworthy. First, the curriculum presents a pattern of requirement setting that does not show the same rationality in professional, general, and specialized education. For instance, the requirements for professional education vary from thirty-four semester credits in Khon Kaen

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[11]Edward J. Kelly, et al., op. cit., p. 23.

TABLE 3.5.--Higher Certificate of Education Curriculum (Paw Kaw Saw Sung).

1. Completion of a minimum of six regular sessions (two academic years). One session consists of at least 12 weeks, each of which consists of five school days with 30 hours of classes.

2. Completion of a minimum of 130 credits, the quality of which is defined by the regulations for evaluation issued by the Ministry of Education.

3. Distribution requirements:

3.1	General Courses	(30 quarter credits)
	Thai	10
	English	10
	Electives	10
	3.1.1 Geography and History	
	3.1.2 General Science	
	3.1.3 Mathematics	
	3.1.4 Religion, Culture and Thai Customs	
3.2	Majors and Minors	(80 quarter credits)
	One major	40
	Two minors, each	20
	Selection can be made from the following, but any major or minor chosen must not be the same as already chosen from 3.1 Courses for majors and minors:	
	3.2.1 Thai	
	3.2.2 English	
	3.2.3 Social Studies	
	3.2.4 Mathematics	
	3.2.5 Science	
	3.2.6 Home Economics	
	Courses for minors only:	
	3.2.7 Agriculture	
	3.2.8 Art	
	3.2.9 Practical Arts	
	3.2.10 Decorative Art	
3.3	Education	(20 quarter credits)
	General Principles of Education	3
	Adolescent Development	2
	Educational Psychology	2
	General Principles of Teaching in Secondary Schools	2
	Teaching Thai, English, Mathematics, Science, Social Studies, Agriculture, Home Economics, Arts, or Handicrafts in Secondary Schools (2 credits for each area taken)	6
	Student Teaching	5
	Total	130 quarter credits

Source: Higher Certificate of Education Curriculum (Bangkok, Thailand: Ministry of Education, 1967).

University to fifty-one semester credits in Chieng-Mai University, requirements that encompass the following courses: History of Education, Philosophy of Education, Educational Psychology, Social Foundation of Education, Teaching Methods, Measurement and Evaluation, Introduction to Audio-Visual, and Curriculum Development.

Second, there are tendencies in requiring as much as possible knowledge in liberal arts or general education, i.e., about 30 per cent of the total requirements are inclined as liberal arts at Chieng-Mai University, and 55 per cent at Khon Kaen University. Third and finally, the tendency at the latter university to group the first and second-year teacher education programs into a common curriculum required of all students regardless of their major areas. This occurs during the third and fourth year of the program and indicates a new pattern of curriculum design of this university (Tables 3.7 and 3.8).

In addition to the above mentioned formal teacher training programs, one may note that there exists in Thailand a program named the "twilight-program." This program is designed primarily for in-service training, but later, through an abusive admission process, it becomes a "backdoor approach for entry into teaching."[12]

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[12] Ibid., p. 75.

TABLE 3.6.--General requirements leading to a Bachelor of Arts or Bachelor of Science in Education.

Subject Fields	Requirements
A. Liberal Arts	a minimum of 51 semester hours
1. English	a minimum of 18
2. Humanities and/or Social Science	a minimum of 6
3. Science and/or Mathematics	a minimum of 6
4. Library Science	a minimum of 3
5. Psychology	a minimum of 3
B. Education	a minimum of 51 semester hours
1. Required Courses	a minimum of 46
2. Electives	a minimum of 5
C. Physical Education	(4 semesters) no credits
D. Major Teaching Area	a minimum of 30-36 semester hours
E. Minor Teaching Area	a minimum of 12 semester hours
Total	150 semester hours

Source: Chieng Mai University, Faculty of Education, Handbook of Information, 1969-1970.

TABLE 3.7.--Common first-, second-, and third-year curriculum in education, Faculty of Education, Khon Kaen University.

First Year		Second Year		Third Year	
Subjects	Credits	Subjects	Credits	Subjects	Credits
Thai 1	2	Thai 3	2	Speech	2
Thai 2	2	Thai 4	2	English 5	2
Physical Education Activities 1a and 1b	1	English 3	2	Introduction to Developmental Psychology	2
English 1	2	English 4	2	Utilization of Instructional Media	2
English 2	2	Physical Education Activities 2a and 2b	1	Secondary School Curriculum	2
Survey of Thai Literature	2	Art Appreciation	2	Scientific Methods	2
Music Appreciation	2	Philosophy of Education	2	Teaching Secondary School Sciences	2
Personal Health Community	2	General Physics 2a and 2b	6	Teaching Secondary School Mathematics	2
Studying Methods	1	General Chemistry 2	4	Measurement and Evaluation in Education	2
General Mathematics a and b	8	Principles of Biology	8	Area of Concentration	6-9[a]
General Physics 1a and 1b	6	History of Thai Education	1	Electives	2-4[a]
Introduction to Philosophy	2	School and Society	2		
Introduction to Psychology	3	Introduction to Educational Psychology	3		
General Chemistry 1	4	Principles of Economics	2		
Total Semester Credits	41	Total Semester Credits	39	Total Semester Credits	32-40

[a]Refer to Table 3.8.

Source: Khon Kaen University Bulletin 1970-1971, pp. 44-46.

TABLE 3.8.--Fourth year curriculum in education, Faculty of Education, Khon Kaen University.

General Requirements

Student Teaching	8 credits
Geology for Teachers	2
General Astronomy	2
Area of Major Concentration	2-6
Electives	8-11

Areas of Major Concentration

Physics	Credits
Electronics 1	3
Electronics 2	3
Physics of Matters	3
Modern Physics	3
Optics	3
Acoustics	3
Analytical Mechanics	3
Electromagnetic Theory	3
Mathematics	
Basic Statistics	3
Differential Equations	3
Mathematical Analysis-1	3
Mathematical Analysis-2	3
Mathematical Analysis-3	3
Development of Mathematics	3

Chemistry	Credits
Organic Chemistry	3
Quantative and Instrumentation	3
Physical Chemistry	3
Inorganic Chemistry	3
Biology	
Animal Morphology and Physiology	3
Plant Morphology and Physiology	3
General Microbiology	3
Genetics	3
Fundamental Cytology	3
General Ecology	3
Elementary Plant Physiology	3

Electives in General Education	Credits
Thai Government and Politics	2
World Civilization	2
Contemporary World Affairs	2
Rural Sociology	2
World Geography	2
Logic	2
Electives in Professional Education	**Credits**
Statistics for Teachers	2
Guidance in the Secondary School	2
Administration of School Systems	2
Mental Health Education	2
Elements of Educational Research	2

Source: Khon Kaen University Bulletin 1970-1971, pp. 46-48.

Students who are admitted to this program usually demonstrate inexperience in pre-teaching. Hence, the "'twilight' program for pre-service teachers could result in imposing thousands of sub-standard teachers in the Thailand system of education. This could develop into . . . a deterioration rather than an advancement in the quality of education provided in Thailand."[13]

Teacher Education in Indonesia

Teacher education in this world's largest archipelago is confronted with tremendously increasing dimensions in education, in terms of growth of enrollments and number of schools, to meet the thirst for knowledge of the Indonesians.

Organization of Teacher Education. Teacher education in Indonesia was first established in 1954 in institutions called Perguruan Tinggi Pendidikan Guru (PTPG or Teacher Education at the Higher-Education level). By 1956, Indonesia had seven institutions of this type, either public or church-related institutions.

Later, in 1958, the PTPG's institutions changed their name and became Fakultas Keguruan dan Ilmu Pedidikan (FKIP or Faculty of Teacher Training and the science

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[13] Ibid.

education[15] which, after the Tjibulang conference,[16] again changed their names to Institut Keguruan dan Ilmu Pedidikan (IKIP or Institute of Teacher Training and the Science of Education).

The administrative organization of each IKIP is similar to that of a university in Southeast Asia; its academic structure consists of faculties, namely: education, social science education, physical-science education, technical education.

Structure of Teacher Education Program. The preparation and education of teachers in Indonesia involves three years, leading to the Sardjana Muda (Bachelor's) degree, and five years, leading to the Sardjana (Master's) degree.

The curriculum in Biology offered at FKIP Malang in 1960 (Table 3.9) indicates that courses in professional education were spread throughout the three-year training. This is favorable for a simultaneous learning experience, since a student while studying "methods" in professional education, also has a chance to associate his professional preparations with his major . . . and, from this

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[15] R. Murray Thomas, Teacher Education Project in Indonesia, "A History and Evaluation 1957-1966," p. 16. (Mimeographed.)

[16] Ibid., p. 30.

TABLE 3.9.--Class-hour requirements in biology curriculum at FKIP, Malang, Indonesia, 1960-1961.

Course Distribution	Class Year I	II	III	Total Requirements	
I. Basic Courses					(46)
A. Education:					12
General Psychology	1			1	
Education Psychology		1		1	
Foundation of Education	1			1	
History of Education		1		1	
Sociology		2		2	
Indonesian Anthropology	2			2	
General Teaching Methods	1	1		2	
Special Teaching Methods			2	2	
B. General					2
Indonesian Language					
English Language	2			2	
German Language					
C. Practice:					32
Student Teaching			6	6	
Botany Laboratory	2	2	3	8	
Zoology Laboratory	2	3	3	8	
Histology Laboratory		2	2	4	
Human Anatomy and Physiology	2	2	2	6	
II. Principal Subjects					(36)
Botany (Morphology)	2	2	2	6	
Botany (Anatomy and Physiology)	2	2	2	6	
Zoology (Anatomy and Physiology)	2	2	2	6	
Comparative Anatomy			2	6	
Cytology					
General Histology					
Cytology/Histology	2	2		4	
Embryology			2	2	
Human Anatomy and Physiology	2	2	2	6	
Genetics			2	2	
Hygiene			2	2	
III. Supporting Subjects					(11)
Physics	1	1	1	3	
Inorganic Chemistry	2	2		4	
Organic Chemistry	2	2		4	
Totals	28	30	35	93	

Source: Henry Gould, op. cit., Table IV, p. 284.

association, to see how different areas fit together as part of his future teaching duties.[17]

However, provision for general education seems to be neglected in the program. Courses which deal with topics such as conservation of natural resources, economics, and commerce that appear more relevant to the Indonesian's life did not figure in the three-year program.[18]

Furthermore, regarding the total requirements, there was a lack of an overview of the university as a whole, but rather emphasis on a departmental or divisional subject area (Table 3.10).

To assure a good preparation of future teachers with similar standards, a conference was held at Malang in 1960. Participants to that conference have decided the uniform requirement for teacher education institutions in Indonesia as follows:[19]

Subject Area	Units and Percentage
General Education:	Minimum of 13 units or 12.3%
Professional Education:	Minimum of 23 units or 21.7%
Subject Matter (Major and Minor):	70 units or 66%

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[17]Edward R. Fagan, "Extending the Roots of Indonesian Teacher Education," International Review of Education, IX, No. 3 (1963-1964), 283.

[18]Ibid., p. 281.

[19]R. Murray Thomas, op. cit., p. 32.

TABLE 3.10.--Requirements of instruction by departments at FKIP, Malang, 1960-1961.

Department	Year			Total
	1st	2nd	3rd	
Indonesian language	22	24	17	63
English language	30	26	17	73
History	23	24	15	62
Mathematics and Physics	22	22	16	60
Biology	28	30	35	93
Economics	21	23	13	57
Education	20	22	16	58

Source: Henry Gould, op. cit., Table III, p. 282.

Later, the 1969 conference brought new suggestions for the proportions of the bachelor's degree which will become finally:[20]

Subject Area	Percentage
General Education	25
Professional Education	12
Major and Minor	60

History of Teacher Education in Vietnam

The purpose of this section is to describe the historical development of education for teachers in Vietnam. Three patterns of educational development were found linked with social changes and foreign influences: (1) the traditional mandarin education, (2) the French colonial education, and (3) the present educational

[20] Ibid., p. 34.

system. Hence, teacher education respected the traditional setting, keeping its curriculum as close as possible to the training of civil servants rather than educators.

Teacher Education in the Traditional Mandarin Education. Vietnamese traditional education aimed to educate all citizens loyal to the sovereign, pious to parents, and respectful to authority.[21] It was basically structured on human relationships, but strictly prepared a man for the Mandarinate.[22]

This educational philosophy was conducted in two types of school organization according to the needs of individuals and the community.

First it was relatively widespread that school was primarily organized within the family. For one reason, it is inexpensive.[23] For another reason, the family is itself a real school of education where concepts of life, social ethics, and responsibility results in love and respect.

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[21]Edgar N. Pike, "Public and Private Education in Vietnam," Asian Culture, II, No. 2 (April-June, 1960), 80.

[22]Ich T. Vũ, "A Historical Survey of Educational Development in Vietnam," Bulletin of the Bureau of School Services, College of Education, University of Kentucky, XXXII, No. 2 (December 28, 1959), 29.

[23]Ibid., p. 31.

The teaching was a hierarchy held by either grandfather or father who "[take] care of the early studies of the children,"[24] but family education was soon extended to formal education in small private schools. These schools, having no official status, received no financial assistance either from the community or the state, and were run by private tutors hired by one or more families. All boys reaching the age of six or seven and wishing an access to the mandarinate ought to take formal education, but not many of them could go beyond the primary level.

Thus, no teacher training programs were adopted, as "teachers were often recruited from among the unsuccessful aspirants for the mandarinate examination."[25]

Second, it was not until 1076, under the sovereignty of the Lý emperors (1009-1225 A.D.)[25] when the Quốc-Tử-Giám or National Academy was founded for children in the court, that attempts in establishing teacher-mandarins education were made. This program was favored by a hierarchy of teacher-mandarins which ranked from the National Academician or Hàn-Lâm Học-Sĩ on the top of the scale to the teacher-mandarin of the seventh

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[24] Ibid.

[25] Ibid., p. 29.

[26] Ibid., p. 32.

class or Huấn-đạo who supervised the formal education in each country or huyện.

However, since there was no clear distinction in primary, secondary, and higher education; educational programs for teachers merely remained as a competitive examination for selecting outstanding scholars, and retired mandarins served as teachers in the national schools. But institutions for teacher education were practically non-existent up to the coming to the country of the French in 1856.[27]

Teacher Education in French Colonial Education. French colonial education developed rapidly as it was influenced by three major factors: (1) the awareness of the western world's progress in technology and science, (2) the development of a national language that appears much easier than the old scholars' language which was based upon Chinese, and (3) the favoritism of the regime toward the learners.

Therefore, the French colonial government conceived education as a means to exploit more effectively the colony's production[28] and to expand French ideas and

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[27]Kim T. Trần, Việt-Nam Sử-Lược (History of Vietnam) (Saigon: Tân-Việt Xuất-bản, 1955), pp. 518ff.

[28]Albert Sarraut, "Sur le Développement de l'Enseignement Indigène," L'Asie Française, CXXCVIII (Janvier, 1921), 23f.

culture throughout the Orient.[29] Thus, teacher education programs were major concentrations of the government that urgently needed teachers to carry out such educational aims.

The bill presented by Governor Le Myre de Villers in 1880 providing free public elementary education for all Vietnamese children and establishing at least one elementary school in each country or populated district[30] offered an opportunity to approach the creation of normal schools or other institutions for teacher education.

It was reported that, up to 1869, there were 126 combined French-Vietnamese elementary schools. The first high school was instituted in Saigon in 1870, and the pioneer in normal schools was created in Gia-Định province in 1871.

The first high school, created in Saigon, did not widely open its doors to Vietnamese students up to 1875, while it was known as Collège Indigène[31]; it later changed

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[29]Edouard Marquis, "L'Enseignement en Cochinchine," Revue du Pacifique, VII, VIII (Juillet-Aout, 1935), 463.

[30]Rene Fauchois, "L'Enseignement au Cambodge, au Laos et Sud-Vietnam," L'Afrique et L'Asie, XXCV, XXCVI (1969), 53.

[31]The term "collège" has no equivalent meaning with the English word "college" and connotes a junior high school.

its name to as Collège Chasseloup Laubat. This high school was soon accredited by the State Department of Education in Paris. However, all existing secondary schools still remained in a combined status, offering at the same time a curriculum designed for French children, and another curriculum strictly for the indigènes or Vietnamese. But all children were required to take one type of examination, the French Baccalaureat, in order to complete their secondary education.

In Hanoi, a similar situation happened to the Lycée Albert Sarraut. Its combined French-Vietnamese curriculum finally was transferred to the Lycée du Protectorat in 1924.

Thus, the French Indochinese General Government made every effort to build two separate educational systems in Vietnam. Schools serving only European students were: in the South, the Lycée Yersin at Dalat, the Lycée Marie-Curie in Saigon; in the Center, the Lycée Nha-Trang, the Lycée Đà-Nẵng; and in the North, the Lycée Français for women in Hanoi. Vietnamese high schools grew over that number with, in the South, the Collège Le Myre de Villers at Mỹ-Tho, the Collège de Cantho, the Collège Gia-Long for women in Saigon; in the Center, the Collège Quốc-Học at Huế, the Collège de Vinh, the Junior High School at Qui-Nhơn, and the College Đồng-Khánh and Collège de Hải-Phòng. The growth of

secondary schools during the colonial period required an efficient supply of teachers.

Hence, teacher education was offered in the following normal schools: Normal School in Hanoi, Normal School in Nam-Định, both for male teachers; Normal School for women, also in Hanoi; Normal School in Saigon and Normal School in Cantho, both coeducational; Normal School in Qui-Nhơn; and finally, programs for teacher education were adopted in the Collège Quốc-Học for male students, and in the Collège Đồng-Khánh for women. But, the objectives of teacher education in these normal schools were limited to development of a civil servant holding a teaching job in elementary schools. The standard requirements were the first cycle of secondary school graduation with either the Diplôme d'Etudes Primaires Supérieures Indochinoises or the Brevet Elementaire. A two-year curriculum led to no degree, but a graduation certificate that assured the graduate a tenure appointment.

At the higher level, teacher education remained limited to the University of Hanoi. The training of teachers for secondary schools was exclusively undertaken by the Ecole Supérieure de Pédagogie at Hanoi. Admission standard requirement was the First Cycle of Secondary school graduation and a three-year program led to a First Cycle of Secondary Education Teacher

Certificate. But, later on, as the number of holders of the Baccalaureat II--a high school graduation certificate--grew out of the capacity of the Higher School of Pedagogy. The admission standard then required that degree for entrance examination, and the length of the program was reduced from three to two years. Graduates were assigned to teach in secondary schools, and only in the First Cycle classes.

In any case, students who entered the Normal schools and the Higher School of Pedagogy at Hanoi, when graduated, were required to teach for ten years in a public school, and wherever they were appointed in the country. However, not many young men and women were attracted to such careers as teachers often earn a very low income, in comparison with other fields of study such as engineering, law, and medicine, which are traditionally and socially esteemed. Hence, scholarships were usually given to students who were admitted to either a normal school or the School of Pedagogy at Hanoi.

Teacher Education in the Present Educational System. The Ecole Supérieure de Pédagogie at Hanoi moved to Saigon after the Geneva Conference (1954), and continued to offer a two-year program for the training of

teachers for the First Cycle of Secondary Schools. The admission requirement still is the Baccalaureat II.

Up to 1956, there existed no training schools for teachers of the Second Cycle of Secondary Schools, as the teaching at that level is carried out by holders of cử-nhân or license (bachelor's degree), graduated from the universities of Hanoi or Saigon or from other institutions of higher education in countries abroad.

Later, in 1957, the Higher School of Pedagogy in Saigon (Trường Cao-Đẳng Sư-phạm Saigon) was chartered to change its status, and become the Faculty of Pedagogy, then included in the University of Saigon. The Faculty offered one three-year program leading to the Second Cycle of Secondary Education Teaching Certificate, and a one-year program leading to the First Cycle of Secondary Education Teaching Certificate. Admission requirements were still (1) the Baccalaureat II, and (2) passing a competitive entrance examination. However, in the academic year 1963-1964, the requirements for admission into the three-year program were changed to the Propaedeutic Certificate (e.g., Propaedeutic certificates in Science: General Mathematics and Physics or MGP, Mathematics-Physics-Chemistry or MPC), instead of the Baccalaureat II. Hence, students were required to choose their teaching subject major before entering into the Faculty of Pedagogy. For instance,

only the students who held the Propaedeutic Certificate in Letters were allowed to compete in an entrance examination into a three-year program, section History-Geography, or Vietnamese, or Foreign Languages, or Philosophy-Psychology. For the same reason, students who wished to be admitted into the Natural Sciences section ought to have the Propaedeutic Certificate of Physical and Natural Science, or S.P.C.N.

This "early selection and crystalization of program [might] infuse curriculum with difficult inflexibilities."[32]

The blossom of institutions of higher education that followed the establishment of the University of Huế in 1957 appeared much more favorable to programs of training of teachers at the university level.

Hence, the opening of a university was generally accompanied with the establishment of a faculty of pedagogy. At the present, there are three public Faculties of Pedagogy--in Saigon, Huế, and Cantho, and three private ones--at the Dalat University, the Vạn-Hạnh University, and the Hòa-Hảo University.

Recently, the creation of a national system of community junior colleges opens another channel to liberal education and teacher education. The first two community junior colleges are in Mytho and Nhatrang.

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[32]Edward R. Fagan, op. cit., p. 281.

In summary, the development of teacher education in Vietnam appears as a natural outgrowth of an educational system that diverts from the traditional education. This education focuses much on the "interest in man and in human relations," e.g., the respect of man for his superior, but lessens the development of scientific attitudes and technical skills in the citizen.

The education for teachers in Vietnam so far steps up with duplication and proliferation of programs of instruction that do not meet the needs of the individual who, at the same time, acts as teacher and citizen. The unawareness of most, if not all, teachers in today's schools is probably the result of this national policy in teacher education which considers teachers as more civil servants than educators.

Programs of Science Teacher Education. In this section, current programs of teacher education in the Faculties of Pedagogy of Saigon and Cantho are analyzed. Special attention is given to the programs of science teacher preparation offered at these two Faculties; each program is evaluated in terms of breadth, depth, continuity and sequence and integrated learning-practicing.

Programs of Science Teacher Education, Faculty of Pedagogy of Saigon

Beginning the academic year 1970-1971, the Faculty of Pedagogy of Saigon offered three types of

science teacher education programs. These were: (1) accelerated programs for first cycle secondary school teachers, (2) regular programs for first cycle secondary school teachers, and (3) regular programs for second cycle secondary school teachers.

Accelerated programs for first cycle secondary school science teachers are two-year programs. Student teachers admitted to this program are required to have the Baccalaureat II (Mathematics or Experimental Sciences Sections with grade C), to maintain good standards in the subject field in their high school records [i.e., students must show their records as among the first ten outstanding in physics and/or chemistry if they apply for the entrance in the Physical Sciences Section], and to pass a competitive examination.

The accelerated programs involve two basic periods of nine months each of preparation. After completion of this first period, prospective teachers are assigned by the Ministry of Education as temporary first cycle secondary school teachers. They, then, teach for one year in a public secondary school. In the following year, they return to the Faculty of Pedagogy, and attend the second period for the completion of the requirements. They , then, are graduated as regular first cycle secondary school science teachers.

These accelerated teacher education programs intend to provide secondary teachers for the urgent needs of the present time (Tables 3.11, 3.12, 3.13).

Parallel to the accelerated programs, the Faculty of Pedagogy adopted regular programs of training of first cycle secondary school teachers, programs which consist of three consecutive terms lasting for twelve months (Table 3.14, 3.15). The requirements for admission culminate in a propaedeutic certificate awarded by the Faculty of Sciences and related to the section subject (i.e., student must hold the Propaedeutic Certificate in Physical and Natural Sciences--SPCN Certificate--if applied for entrance in Natural Sciences section), and passing of the entrance examination.

Finally, the regular programs for second cycle secondary school teachers involve a three-year curriculum (3.16, 3.17, 3.18, 3.19). The admission requirements are the same as in the case of the regular programs for first cycle secondary school teachers.

Breadth. A study of the three programs of science teacher education of the Faculty of Saigon leads to the following remarks:

1. There is a lack of introductory interdisciplinary courses required for general education. Students are not equipped with an understanding of

TABLE 3.11.--Program of Science Teacher Education, Section: Physical Sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	First Cycle of Secondary Education Accelerated Programs

Course Titles	Hours/Week
First Period	
Physics 1: Electricity and Mechanics	4
Chemistry 1: General Chemistry and Inorganic Chemistry	4
Mathematics 1: Analyses	3
Mathematics 2: Arithmetic and Algebra	3
Educational Psychology 1	3
General Methods of Teaching	3
Educational Administration	3
Educational Guidance	3
Practice in Teaching Physics 1	6
Practice in Teaching Chemistry 1	6
Second Period	
Physics 2: Electricity, Thermodynamics, Optics	6
Chemistry 2: Organic Chemistry	4
Mathematics 3: Analyses	3
Mathematics 4: Arithmetic and Algebra	3
Educational Psychology 2	3
Psychology of the Adolescent	3
Educational Concepts	3
Health Education	3
Practice in Teaching Physics 2	6
Practice in Teaching Chemistry 2	6

Source: Official Data

TABLE 3.12.--Program of Science Teacher Education, Section: Natural Sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	First Cycle of Secondary Education Accelerated Programs	
Course Titles	Hours/Week	
First Period	Lecture	Laboratory
Zoology 1	3	3
Botany 1	3	3
Geology 1	3	3
Physics	3	
Educational Psychology 1	3	
General Methods of Teaching	3	
Educational Administration	3	
Educational Guidance	3	
Practice in Teaching 1	4	
Second Period		
Zoology 2	3	3
Botany 2	3	3
Geology 2	3	3
Chemistry	3	
Educational Psychology 2	3	
Psychology of the Adolescent	3	
Educational Concepts	3	
Health Education	3	
Practice in Teaching 2	4	

Source: Official Data

TABLE 3.13.--Program of Science Teacher Education, Section: Mathematics.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	First Cycle of Secondary Education Accelerated Programs
Course Title	Hours/Week
First Period	
Arithmetic 1	3
Analyses 1	3
Algebra 1	3
Physics: Electro-Mechanics	4
Mathematics: Exercises	2
Educational Psychology 1	3
General Methods of Teaching	3
Educational Administration	3
Educational Guidance	3
Practice in Teaching	4
Second Period	
Arithmetic 2	3
Analyses 2	3
Algebra 2	3
Mathematics: Exercises	2
Educational Psychology 2	3
Psychology of the Adolescent	3
Educational Concepts	3
Health Education	3
Practice in Teaching	4

Source: Official Data

TABLE 3.14.--Program of Science Teacher Education, Section: Natural Sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	First Cycle of Secondary Education
Course Titles	Hours/Week
First Term	
Geology	4
Geology Laboratory	4
Inorganic Chemistry	3
Physics	3
Concepts in Education	3
General Methods of Teaching	3
Educational Psychology 1	3
National Education	3
Practice in Teaching Physical and Natural Sciences	11
Second Term	
Zoology	6
Zoology Laboratory	6
Physics	3
Educational Psychology 2	3
Psychology of the Adolescent	3
Introductory to Educational Guidance	3
International Education	3
Practice in Teaching Physical and Natural Sciences	9
Third Term	
Botany	5
Botany Laboratory	6
Organic Chemistry	3
Educational Administration	3
Health Education	3
Educational Media	3
Psychology of the Adolescent	3
Educational Guidance	3
Practice in Teaching Physical and Natural Sciences	10

Source: Official Data

TABLE 3.15.--Program of Science Teacher Education, Section: Physical Sciences and Mathematics.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	First Cycle of Secondary Education
Course Titles	Hours/Week
First Term	
Arithmetic and Algebra	3
Analyses	3
Mechanics and Electricity	3
Modern Algebra: Exercises	2
Concepts in Education	3
General Methods of Teaching	3
Educational Psychology 1	3
National Education	3
Practice in Teaching Mathematics, Physics, and Chemistry	10
Second Term	
Arithmetic and Algebra	3
Analyses	2
Electro-Magnetism	3
Inorganic Chemistry	4
Modern Algebra: Exercises	2
Educational Psychology 2	3
Psychology of the Adolescent	3
Introductory to Educational Guidance	3
International Education	3
Practice in Teaching Mathematics, Physics, and Chemistry	10
Third Term	
Arithmetic and Algebra	2
Analyses	2
Applied Physics	3
Mathematics: Exercises	3
Educational Administration	3
Health Education	3
Educational Media	3
Psychology of the Adolescent	3
Educational Guidance	3
Practice in Teaching Mathematics, Physics, and Chemistry	10

Source: Official Data

TABLE 3.16.--Program of Science Teacher Education, Section: Physical Sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	Second Cycle of Secondary Education	
Course Titles	Hours/Week	
A. Academic Requirements	Lecture	Laboratory
First Year		
Certificate of Physical Sciences I	5	3
Electives: Mathematical Techniques in Physics Mechanics	4	3
Second Year		
Certificate of Organic Structural Chemistry I	4	3
Electives: Mechanics Electricity Electronics Thermodynamics	4	3
Third Year		
Certificate of Organic Structural Chemistry II	4	3
Electives: Organic Chemistry I Organic Chemistry II Applied Physics	4	3
B. Professional Requirements (See Table 3.10)		

Source: Official Data

TABLE 3.17.--Program of Science Teacher Education, Section: Natural Sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	Second Cycle of Secondary Education	
Course Titles	Hours/Week	
A. Academic Requirements	Lecture	Laboratory
First Year		
Certificate of Zoology I	5	3
Certificate of Zoology II	5	3
Second Year		
Certificate of Botany I	4 1/2	3 1/2
Electives: Plant Physiology I Plant Physiology II Cryptogams Phanerogams Algae	4 1/2	3 1/2
Third Year		
Certificate of Animal Physiology	5	5
Electives: Crystallography and Mineralogy Introductory Geology Applied Physics World's Geological History Geological History of Indochina Paleontology	4	4
B. Professional Requirements (See Table		

Source: Official Data

TABLE 3.18.--Program of Science Teacher Education, Section: Mathematics.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	Second Cycle of Secondary Education	
Course Titles	Hours/Week	
A. Academic Requirements	Lecture	Laboratory
First Year		
Certificate of Mathematics I	4	2
Arithmetics Algebra Mathematics Applied in Mechanics Applied Physics	4	2
Second Year		
Certificate of Mathematics II	4	2
Electives: Thermodynamics, or Optics, or Electricity, or Theoretical Physics	4	2
Third Year		
Certificate of Statistics	4	2
Electives: Thermodynamics, or Optics, or Electricity, or Theoretical Physics Applied Mechanics I Algebra II Mechanics	4	3
B. Professional Requirements (See Table		

Source: Official Data

TABLE 3.19.--Program of Science Teacher Education, common professional requirements for all sections: mathematics, physical, natural sciences.

University of Saigon Faculty of Pedagogy Academic Year 1970-1971	Second Cycle of Secondary Education
Course Titles	Hours/Week
Professional Requirements	
First Year	
First Semester	
History and Philosophy of Education	2
Issues in National Education	2
Second Semester	
Educational Psychology	2
Testing and Evaluation	2
Foreign Languages: French and English	2
Second Year	
First Semester	
Psychology of the Adolescent	2
Health Education	2
Second Semester	
School Management and Inspection	2
Problems in International Education	2
Foreign Languages: French and English	2
Third Year	
First Semester	
School Management and Inspection	2
Educational Media	2
Second Semester	
Professional Morality and Public Relations	2
History and Development of Science	2
History and Development of Mathematics[a]	2

[a]Students in Mathematics section should not take course in History and development of science.

Source: Official Data

human life, liberal arts, philosophy, sociology . . . which permits them to see social implications of scientific discovery and thinking. Their learning is confined to rigid "built in" specialized courses which do not provide them a perspective view beyond their subject field.

2. The separation among the sections within one program of teacher education leaves the prospective teachers unable to understand the structure of and basic concepts in various disciplines related to their major field. For instance, students in the Natural Sciences section of the Accelerated First Cycle Secondary School teachers program (Table 3.12) do not receive any courses in Mathematics; however, study in some Natural Sciences sub-fields such as Biometrics, Ecology, etc., does require a good understanding in Calculus at the collegiate level. This narrowness in the students' learning would limit their future self-improvement either for their own interests or their teaching careers.

For another circumstance, prospective teachers "must be able not only to help their [future] students understand physics or biology but also must, themselves, comprehend the field of biophysics, which incorporates

physics and chemistry as well as biology and related sciences."[33] Discussion plays an important role in today's science teaching. It may happen that during a chemistry class, for example, a question concerned with anatomy or plant physiology is raised. Certainly, the teachers are not obliged to answer all their students' questions but if the curiosity of the latter are always not satisfied, their interest for the subject might be, for this reason, reduced and the motivation in their learning inhibited.

Depth. The need for depth in science teacher education programs has two reasons:

> The first basic reason . . . is scientific in nature. The successful science teacher should experience continuous intellectual growth in a number of directions. . . .
>
> The second argument for depth is professional in nature and emanates from the need of the teacher to be able to stimulate students intellectually. Much of this ability follows from the teacher's competence in dealing with recent developments in science. Through a depth of study in science, the science teacher is able to stimulate the students' interests and to guide their individual study.[34]

The program for the first cycle of secondary school teachers, a short period of one or two years

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[33]John S. Richardson, et al., "The Education of Science Teachers," in Rethinking Science Education, ed. by Nelson B. Henry, The 59th Yearbook of NSSE (Chicago: The University of Chicago Press, 1960), chapter XIV, p. 266.

[34]Ibid., pp. 266f.

training, is insufficient to assure to prospective teachers depth in the major field.

The four-year program of teacher education at the Faculty of Pedagogy of Saigon (Table 3.16, 3.17, 3.18) reveals that thirty year credits or fifty-three semester credits, beyond the propaedeutic preparation (one year credit is equivalent to thirty to seventeen semester credits with an understanding that one semester includes seventeen weeks) required for the major and minor in each field are large enough to provide depth in the subject area. However: (1) the "usual" way of dictating the lecture-notes to students--as a result of a lack of textbooks--often requires more time than is spent for a normal lecture; hence, the length of courses tends to be reduced; consequently, students learn less than they might; (2) the depth is narrowed into a very small area of the field of the scientist as a researcher rather than as a secondary school teacher. For instance, in the section of Physical Sciences (Table 3.16), students are required to get depth in only one of the following areas: Mechanics, Electricity, Thermodynamics, Electronics. However, an intensive knowledge in all of them, or at least in the first three subjects, is necessary for the teaching of physics in secondary schools.

Continuity and Sequence

In assessing the worth of the curriculum of science teacher education of the Faculty of Pedagogy of Saigon in terms of sequential and continuing learning experience, criticism would fall into the following points:

1. In the accelerated program (Table 3.11, 3.12, 3.13), since prospective teachers are going to temporarily undertake the teaching job for one year at the end of the first period, for an effective learning of the behavioral attitude of the pupils as well as of the peer group, a course in Psychology of the Adolescent and Educational Concepts would be better offered in the first period of the program in place of the two courses, Educational Administration, and Educational Guidance, which can be delayed until the next period. In addition, in the second cycle of the secondary school teacher programs (Table 3.19), questions would be raised: How relevant is the course in Testing and Evaluation while students do not have an introductory course in the nature of teaching? Will it be useful to have Introductory or General Psychology before taking Educational Psychology and Psychology of the Adolescent?

2. The design of the curriculum of the preparation of second and first cycle secondary teachers in all natural sciences sections (Table 3.14, 3.17) shows that the intention of breaking the body of learning into small pieces of knowledge applied to the setting of the certificates assigned to each term or each year, e.g., zoology for the first year, botany for the second year, and animal physiology for the third year, does not involve in the learner an integral knowledge of the field but rather develops in him an uncorrelated and restricted view of different areas of the learning subject.

3. Finally the practice teaching offered in the second period of the accelerated program (3.11, 3.12, 3.13) appears unnecessary for the prospective teachers since they have already been experiencing teaching for one year.

Integrated Learning-Practicing

The main purpose of practice-teaching in the Faculty of Pedagogy of Saigon is to teach prospective teachers how to prepare and to present lecture notes. This practice-teaching does not provide to prospective teachers the opportunity to practice what they have learned in other professional courses, i.e., psychology,

philosophy, school administration, testing, and evaluation. The limited amount of time allowed in each practice teaching class (one hour) does not afford the student teachers an appropriate time to get acquainted with pupils, to find out the differences in their interest and educational background, in their way of learning, etc. Each student teacher comes and stays in an assigned school, only as long as the practice-teaching requires. Hence, he fails to have the occasion of communicating with teachers in the school, of participating in school meetings for getting experience in solving current school problems that he will meet later in his future profession.

Programs of Science Teacher Education
Faculty of Pedagogy of Cantho

Since this Faculty has a tendency to duplicate the programs of instruction of the Faculty of Pedagogy of Saigon, it is likely to perpetuate the weaknessess mentioned previously.

In addition to its regular programs of the First Cycle of Secondary Science Teachers, the Faculty of Pedagogy of Cantho has a similar curriculum but operates under accelerated programs. The regular programs are two-year programs, encompassing two sections, Physical Sciences and Mathematics, and Natural Sciences, leading to the First Cycle of Secondary school teacher certificate.

During the freshman year, student teachers are required to take prescribed courses in the Faculty of Science. Professional courses are given in the second year at the Faculty of Pedagogy (Table 3.20, 3.21).

Admission requirements to these programs are the Baccalaureat II, section Mathematics, (B) or Experimental Sciences (A), and passing of a competitive entrance examination.

The review of the curriculum of science teacher education at the University of Cantho leads to the following remarks:

1. There are some possibilities of reorganizing the setting of introductory courses into a more rational distribution and, hence, avoiding costly and duplicating courses, i.e., the courses in Fundamentals of Chemistry 1 and 2 are appropriate to both programs; introductory courses in mathematics or physics could be organized in packages of required courses for all freshmen, rather than divided separately for each section. For a similar reason, professional courses in the sophomore year (Educational Psychology, General Education, History and Philosophy of Science, School Administration, Science Education) would be better offered under required courses given in

TABLE 3.20.--Program of Science Teacher Education, Section: Physical Sciences and Mathematics.

University of Cantho Faculty of Pedagogy	First Cycle of Secondary Education	
Course Titles	Hours/Week	Credits
Freshman Year		
Fundamentals of Chemistry 1; General Chemistry	1	1
Fundamentals of Chemistry 2; Organic Chemistry	1	1
Fundamentals of Chemistry 3; Inorganic Chemistry	1	1
Fundamentals of Mathematics 1; Algebra	1	1
Fundamentals of Mathematics 2; Analytical Geometry	3	3
Fundamentals of Mathematics 3; Geometry	1	1
Fundamentals of Mathematics 4; Calculus 1	1	1
Fundamentals of Mathematics 5; Laboratory	2	1
Fundamentals of Physics 1; Mechanics and Thermodynamics	1 1/2	1 1/2
Fundamentals of Physics 2; Electricity	1 1/2	1 1/2
Fundamentals of Physics 3; Optics	1	1
Fundamentals of Physics 4; Laboratory	2 1/2	1
Fundamentals of Chemistry 4; Laboratory	2 1/2	1
Foreign Language	2	1
Electives:		
History of Science	1	1
Sociology	1	1
	24	
Sophomore Year		
Educational Psychology	1	1
General Education	1	1
History and Philosophy of Science	2	2
School Administration	1	1
Science Education	2	2
Methods of Teaching Mathematics	1/2	1/2
Teaching of Mathematics	1 1/2	1 1/2
Teaching of Physical Sciences	1 1/2	1 1/2
Chemistry for Secondary School	2	2
Physics for Secondary School	2	2
Algebra for Secondary School	2	2
Geometry for Secondary School	2	2
	18 1/2	

Source: Official Data

TABLE 3.21.--Program of Science Teacher Education, Section: Natural Sciences.

University of Cantho Faculty of Pedagogy	First Cycle of Secondary Education	
Course Titles	Hours/Week	Credits
Freshman Year		
Introductory Animal Biology	2	2
Introductory Animal Biology Laboratory	3	1
Fundamentals of Botany	2	2
Fundamentals of Botany Laboratory	3	1
Fundamentals of Physics	2	2
Fundamentals of Physics Laboratory	2 1/2	1
Fundamentals of Chemistry: General and Inorganic Chemistry	1	1
Fundamentals of Chemistry: Organic Chemistry	1	1
Fundamentals of Chemistry Laboratory	2 1/2	1
Fundamentals of Mathematics	1	1
Introductory Geology	2	2
Introductory Geology Laboratory	3	1
Foreign Language	1	1
Electives:		
History of Science, or	1	1
Sociology	1	1
	29	
Sophomore Year		
Educational Psychology	1	1
General Education	1	1
School Administration	1	1
Science Education	2	2
History and Philosophy of Science	2	2
Methods of Teaching Natural Sciences	1/2	1/2
Teaching of Physical Sciences	1 1/2	1 1/2
Teaching of Natural Sciences	1 1/2	1 1/2
Zoology for Secondary School	2	2
Zoology for Secondary School Laboratory	3	1
Botany for Secondary School	1	1
Botany for Secondary School Laboratory	2	1
Animal Physiology	2	2
General Geology	2	2
General Geology Laboratory	3	1
Electives:		
Animal Physiology 2, or	1	1
Chemistry for Secondary School	1	1
	27 1/2	

Source: Official Data

different sections as needed and student teachers may then select the section of their choice.

2. Courses in special subject fields (i.e., chemistry, physics, algebra, geometry, zoology, botany) designed for secondary schools are given with the intention that they could be more useful to the prospective teachers in their later teaching job, but could not avoid a duplication of lectures on the fundamental or basic principles and concepts (e.g., the basic concept of work and energy will certainly be repeated in the course in physics for secondary schools--Table 3.20).

   It is hoped that these courses in special subject fields designed for secondary schools could be included in courses in methods of teaching since the latter are also dealing with those in the special field.

3. The programs for science teachers of the Faculty of Pedagogy of Cantho fail to meet the requirements for professional orientation for student teachers during their freshman year. The prospective teachers do not have any guidance in the professional field of teaching nor do they receive counseling regarding their future career when they enter into the Faculty of Pedagogy.

Conclusion

From the above descriptions and analyses of programs, the following major points seem pertinent as a result of this comparative study.

First, almost all of the curricula described above indicate new trends toward a design patterned on four basic components: general education, professional education, specialized education (major and minor areas of study) and electives.

General education intends to equip the prospective teachers with broad knowledge that would permit them to become educated men and, at the same time, make them able to handle their later teaching in secondary schools.

Professional education provides them the full mastery in both their role and function as teachers, school administrators, and business managers.

Specialized education focuses on major and minor areas of concentration which would deepen the student teachers' knowledge in the field that they will teach. However, several curricula have shown more departmental than any other components (i.e., the case of Indonesia and Vietnam).

Regarding free elective courses, some curricula offer this option to student teachers.

The curriculum of the Faculties of Pedagogy in Vietnam is not among these since their electives only

permit a choice of specializing in a small area of the concentration field. Each of these elective courses is provided with five or six credits per year and usually represents one-third of the requirement for the major field.

Second, it appears that internship is helpful and necessary to provide professional maturation of prospective teachers.

Third, it seems that the appropriate period of teacher training requires four years beyond high school graduation. This is a premise of an effective teacher education program.

For short-term planning, the four-year program probably could not immediately be implemented, but it should be retained as a goal for long-range planning in terms of the quality of teaching.

Summary of the Chapter

In this chapter are presented (1) the different aspects of teacher education in the Philippines, Indonesia, and Thailand, and (2) the historical development and present status of teacher education in Vietnam. The review of the present curricula of the Faculties of Pedagogy in Saigon and Cantho reveals major weaknesses in curriculum planning. A conclusion that points out three common aspects of the curricula studied suggests an approach to deal with a philosophy of the preparation of science teachers which will be presented in the following chapter.

CHAPTER IV

THE PROPOSED MODEL PROGRAM OF SECONDARY SCIENCE TEACHER EDUCATION

The major purpose of the present chapter is to propose a model program of secondary science teacher education for Vietnam, taking into account current trends in the preparation of teachers in the country as it is facing up to post-war problems.

In dealing with the proposed model program, the following sequential topics will be considered: (a) clarification of objectives of the proposed program, (b) assumptions, (c) the proposed program with its components and pattern, (d) evaluation of the proposed program, and (e) conclusions.

Current Trends in Teacher Education in Vietnam

Teacher education in Vietnam, recently, involves much in improving its programs to meet the urgent needs of the rapid growth of both elementary and secondary schools.

One of the most significant moves toward its improvement is the setting up of a National Commission on Developmental Research in Education and Pedagogy (Hội-Đồng Nghiên-Cứu Phát-triển Giáo-dục và Sư-Phạm), in October, 1971, by the Ministry of Education. The commission is organized in a Permanent Central Committee and four Task Forces, each task force dealing with an assigned duty. They are: Curriculum Task Force, Task Force on Minimum Standards for Developing Teacher Education Institutions and Programs; Task Force on Course Credit System; Task Force on Educational and Pedagogical Research; and Task Force on Graduate Education.

The Task Force on Curriculum focuses its attention on the curriculum content of a modern Teacher Education Program for Vietnam that must be based upon the following criteria: (1) the kind and amount of general and professional courses and experiences needed by all Vietnamese teachers, (2) the kind and amount of study that will be necessary for teaching in Vietnamese schools--particularly elementary schools, comprehensive secondary schools, technical and vocational schools--, and (3) the length of time for practical experiences that all teachers should have at the pre-service level, the graduate level, and the in-service program.

It is suggested that the task force will follow these steps:

a. Survey the opinion of parents, and other lay persons, as to the role of the school in Vietnam: What the school should do for children and youth;

b. Survey the opinion of education service chiefs, school principals and Ministry of Education officials who employ teachers: What strengths exist in the present programs of teacher education? What weaknesses? How can the teacher education programs be improved?

c. Survey resources not now being used but which should be tapped in educating teachers;

d. Conduct a study of the constitution, ministerial decrees, addresses by the President, Prime Minister, and others to ascertain the Government of Vietnam's goals and objectives for Vietnamese education--hence teacher education;

e. Make a comparative study of the content of existing teacher education programs in all institutions;

f. Review recent published accounts of teacher education programs in other developing countries and in countries with well-established systems of education;

g. Invite consultants with recent specialized study in some aspects of teacher education to work with the task force;

h. Formulate models of teacher education curricula for the various levels and fields of teacher education including the preparation of school administrators and supervisors;

i. Prepare recommendations for the Ministry of Education and representatives of teacher education institutions to consider for implementation;

j. Prepare a time-table and suggestions for phasing in the new teacher education curricula;

k. Based upon the study and recommendations, prepare a draft of a guide for curriculum development in Vietnamese teacher education institutions.

The outline of the duty of the Task Force on Minimum Standards for teacher education programs draws heavily on the recommendations for the preparation of teachers who would play a significant role in the nation's post-war development. It is planned that the Task Force consider the actual educational situation concerning the organization and administration of curriculum, the teaching and administrative personnel, and the physical plant and facilities for implementing the program. At the same time the quality of the programs, including minimum requirements for the future teachers in terms of professional knowledge and skills, must be part of the charge of the commission.

The National Commission on Developmental Research in Education and Pedagogy suggests the following procedures in initiating the work of this task force as indicated in the Commission's proposal:

1. Make comparative studies of present organization of courses in each teacher education institution or program: (a) entrance requirements, length of program in weeks, months, or years, hours of instruction per day, out-of-school study requirements; (b) requirements for diplomas or degrees, and grading systems; (c) the qualifications of the staff for the instruction and administration of the schools: academic preparation, experience, civil service rating, hours of teaching required; (d) characteristics of the plant and facilities of the teacher education institution: classroom space, library space and number of volumes, cafeteria or lunch room, administrative offices, dormitories.

2. Study guides and handbooks related to accredited or approved teacher education programs in developed countries.

3. Discuss and formulate with consultants, selected administrators, and teachers, a workable set of requirements for Vietnamese institutions which will unify and equalize preparation.

4. Make recommendations to the Ministry of Education which will enable teacher education institutions to raise the quality level of teacher education programs.

The Task Force on Course Credit System will study, develop, and make recommendations on a unified system of conferring credit either at the professional or academic undergraduate level. The primary purpose of such a system is to enable both pre-service and in-service teachers to:

1. Receive recognition for the described units of subject matter which they have studied.
2. Accumulate credit for all professional study which will lead to a certificate, diploma, and salary increment which meets minimum standards as recommended by the Task Force on Standards.
3. Transfer from one institution to another without loss of time.
4. Pursue studies while on the job or at intervals without loss of credit.

This task force's job description includes its (1) responsibility of developing plans that can assure all types of programs of teacher education without duplication of study done in the interim programs and (2) coordination with the task force on Minimum Standards.

Finally, the two last task forces--on Educational and Pedagogical Research and on Graduate Education--are designed to improve teacher education programs through current studies. Since they are newly created, the job descriptions of these task forces are not included in the Commission's proposal.

Recent trends in teacher education are also noticeable with two programs offered (1) one at the National Technical Center at Phú-Thọ and (2) another one at the National Agricultural Center in Saigon. The first type of teacher education program is administered by the Higher School of Technical Pedagogy (Trường Cao-Đẳng Sư-Phạm Kỹ-Thuật). The length of the program is five years, the first four years being concentrated on the specialization training, and the last year of the program involving the professional training. The second type of vocational teacher education program is concerned with the preparation of agricultural science teachers, and is under the auspices of the Higher School of Agricultural Pedagogy (Trường Cao-Đẳng Sư-Phạm Nông-Nghiệp). The curriculum pattern is similar to that of the program of technical education teachers, with four years of subject concentration courses and one year of professional courses.

Both these programs of vocational teacher education are provided to train more secondary vocational teachers for vocational and technical schools.

Thus, these new trends in teacher training are of great interest in designing a proposed program for science teachers.

The Proposed Program

Definition of Objectives of the Proposed Program of Science Teacher Education in Vietnam

Conscious of science education as the development of inquiry skills, of public education as the guardian of a democratic society, and of the vocational and cultural needs and interests of the Vietnamese teachers as the citizen's welfare, the objectives of the proposed program for science teachers may be described as follows:

1. To provide the prospective teachers with broad general education that affords them enlightened learning in the basic ideas of civilization, thus making them responsible teachers and educators as well as cognizant citizens.
2. To afford the prospective teachers an approach to the development of knowledge and understanding in children; and to acquire skills to help young people develop and learn to the fullest extent of their abilities.

3. To provide the student teachers with a demonstrated competence in professional knowledge with particular skills in communicating with, motivating, and stimulating students in a fruitful two-fold relationship: student-teacher-subjects leading toward academic and educational achievements.

4. To develop in the student teachers a resourcefulness and proficiency in the preparation of future citizenry of a democratic society, using science education as a resource for vitalizing and enriching the community life, activity, and progress.

The foregoing statements of objectives are made in favor of the proposed program of science teacher education as it will meet the urgent needs of post-war reconstruction and social problems. It is understood that these objectives are subject to change as far as education must be the challenge of the society.

Assumptions

For the purpose of the above objectives, the proposed program of science teacher education is developed in accord with the following assumptions:

It is assumed that:

1. "All teachers need to be broadly and liberally educated."[1] "If not broadly grounded [they] can become narrowly absorbed in [their] subject, with consequent loss of contact with students of many and varied interests. It is especially vital for [them] to acquire in college a good knowledge of fields other than [their] own--not the knowledge or the interest of the expert [is] but that of the intelligent alive citizen[s]."[2] This general education will lay in teachers a broad and firm base for a lifetime of learning and stress the interrelatedness of major concepts within the various disciplines and make teachers capable of interpreting content and technological concepts in terms of the humanistic needs of the individual. "This liberal education is required of every educated person, regardless of vocational or professional aims and aspirations."[3]

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[1]National Commission on Teacher Education and Professional Standards, The Education of Teachers, Report of the Kansas TEPS Conference 1959, Curriculum Programs (Washington, D.C.: National Education Association of the United States, 1959), p. 36.

[2]Committee on Teacher Training of the National Council of Independent Schools, Preparation of Teachers for Secondary Schools, A Report (Boston, Mass.: National Council of Independent Schools, 1958), p. 12.

[3]G. K. Hodenfield and T. M. Stinnett, The Education of Teachers--Conflict and Consensus (New Jersey: Prentice-Hall, Inc., 1961), p. 48.

2. The program of general education should involve materials from each of the following fields:

-- Physical Sciences and Mathematics, which should cover the materials from chemistry, physics, geology, astronomy, and mathematics;
-- Biological Sciences, which should include materials from general biology, botany, physiology, and bio-chemistry;
-- Social Sciences, which should include materials from economics, political science, anthropology, sociology, and history;
-- Humanities, which, in terms of general education, should include materials from philosophy, psychology, and literature, as well as oral and written expression in one's native language and probably in a foreign language;
-- Fine Arts, which should include learning in various types of arts, e.g., writing, music, etc.[4]

3. An undergraduate program for secondary school science teachers should include a major in the teaching field of sufficient depth to make possible further study of this subject field at the graduate level.[5]

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[4]Lindley J. Stiles, A. S. Barr, Harl R. Douglass, and Hubert H. Mills, Teacher Education in the United States (New York: The Ronald Press Company, 1960), p. 169.

[5]AAAS Commission on Science Education and the National Association of State Directors of Teacher Education and Certification, Guidelines and Standards for the Education of Secondary School Teachers of Science and Mathematics (Washington, D.C.: American Association for the Advancement of Science, 1971), p. 21.

> Assuming a minimum of one hundred and twenty semester hours of academic work for graduation . . ., one-half of the student's time for preparation in his teaching area seems reasonable to expect if he is to be properly prepared. Furthermore, this amount of concentration can give such depth that it will be possible for him to build on it later with a fifth year or more of content material to further improve his competence in the science area. . . . On the other hand, if multiple teaching assignments are necessary, some favorable combinations are physics and mathematics, chemistry and physics, and biology and health.[6]

4. Teacher education programs

> . . . should include preparation in areas related to the subject to be taught. To acquire an adequate mastery of mathematics and breadth of understanding in the sciences, the prospective physics teacher will be required to devote approximately [one] fourth of his college program to courses in these areas:
>
> A. A year course in the general principles of chemistry. . . . This course should include composition and structure of matter, atomic and molecular theory, states and transitions of matter, stoichiometry nature of solutions, periodic tables and relationships, rates of reaction and equilibrium . . . , oxidation-reduction and electrochemistry, and colloidal state.
>
> B. The equivalent of four semester courses in mathematics including a year course in calculus is essential, and one semester of differential equations is desirable. If mathematics is to be a second teaching field, additional mathematics courses would also be necessary.
>
> C. A year course in principles of biology, including characteristics of living organisms, cell theory, structural systems of plants and animals, metabolism, maintenance of individual (health and disease) is recommended.

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[6]Alfred B. Garrett, et al., "Recommendation for the Preparation of High School Teachers of Science and Mathematics," School Science and Mathematics, LIX, No. 4 (April, 1959), 283.

D. A one-semester course selected from one of the following fields: geology, meteorology, physical geography, or astronomy is also recommended.[7]

The requirement for a teacher of biology appears to be more difficult to outline than for the teachers of other sciences and mathematics. . . . A year of college physics together with a year of college chemistry may suffice to provide a background; but it should be emphasized that in the field of chemistry an introduction to organic chemistry and biochemistry is needed. . . . Some mathematics is required for an understanding of modern genetics, ecology, and physiology. This may include introductory calculus and a good foundation in probability and statistics. Psychology is important to the understanding of behavior. . . . All in all, about one-fourth of the total four-year college program of a prospective secondary school biology teacher should be allotted to the related science fields and mathematics, approximately equal to the amount of work taken in biology itself.[8]

5. The courses which are recommended in each teaching area, together with supporting courses should be outlined approximately as follows.[9]

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[7]National Association of State Directors of Teacher Education and Certification, Guidelines for Preparation Programs of Teachers of Secondary School Science and Mathematics (Washington, D.C.: American Association for the Advancement of Science, 1961), p. 15f.

[8]Ibid., p. 9f.

[9]Alfred B. Garrett, et al., op. cit., p. 284ff.

I. SUGGESTED COURSES IN BIOLOGY AND OTHER SCIENCES FOR THE PREPARATION OF HIGH SCHOOL TEACHERS OF BIOLOGY
(Given in semester hours)

Suggested Courses (See notes Below)	A	B	C	D	E	4-year total
Biology	10	8	4	5	4	30
Chemistry						12
Physics						8
Earth Science						3
Mathematics						6
Totals						59

Description of Biology Courses

A. Principles of Biology. Characteristics of living organisms, cell theory, structural system of plants and animals, metabolism, maintenance of individual, (health and disease).

B. Plant and Animal Physiology and Anatomy. Morphology, study of tissues, functional activities of cells and tissues, reflexes and tropisms, functional units of systems, catalysts, and enzymes.

C. Ecology and Conservation. Environment, soil, populations, relationships of species, distribution of communities. Field work should be an integral part of this course. This course could be coordinated with the work in Earth Sciences.

D. Developmental Anatomy and Genetics. Growth and development, principles of heredity, evolution.

E. Preparation and Use of Biological Materials. This course should be conducted by one conversant with the problems of biology teachers. Consideration must be given to teaching techniques peculiar to biology. Preparation and proper use of demonstration and laboratory materials, teaching aids and methods should be emphasized.

II. SUGGESTED COURSES IN CHEMISTRY AND OTHER SCIENCES FOR HIGH SCHOOL TEACHERS OF CHEMISTRY

(Given in semester hours)

Suggested Courses (See Notes Below)	A	B	C	D	4-year total
Chemistry	8	8	4	8	28
Physics					8
Biology					8
Earth Science					3
Mathematics					12
Totals					59

Description of Chemistry Courses

A. General Principles: Composition and structure of matter, atomic and molecular theory, states and transitions of matter, stoichiometry, nature of solutions, periodic tables and relationships, rates of reactions and equilibrium, ionic equilibrium and properties of electrolytes, oxidation-reduction and electro-chemistry, energy relationships and colloidal state.

B. Organic: Nomenclature, hydrocarbon series, functional groups and their basic reactions, typical methods of preparation, application.

C. Analytical: Gravimetric and volumetric and instrumental methods and their applications and limitations.

D. Physical: Determination of precise physical properties and the application of these data to problems of reaction rates, equilibrium systems and structure determinations.

III. SUGGESTED COURSES IN PHYSICS AND OTHER SCIENCES FOR THE PREPARATION OF HIGH SCHOOL TEACHERS OF PHYSICS

(Given in semester hours)

Suggested Courses (See notes Below)	A	B	C	4-year total
Physics	10	10	5	25
Chemistry				13
Biology				6
Earth Science				3
Mathematics				13
Totals				60

Description of Physics Courses

A. Introductory Course in College Physics: A course which covers the conventional areas of mechanics, sound, heat, electricity, magnetism, light and some aspects of modern physics. Problem work and laboratory experience should make up at least half of course activities.

B. A second year course in Physics: A composite of the advanced courses in heat, light and electricity especially planned for the needs of the secondary teacher of physics. Emphasis should be on a thorough treatment of a limited number of concepts and principles in these areas. Experiences should be provided in planning experimental demonstrations and laboratory work associated with these concepts and principles. The usual courses in advanced light, etc. may be substituted in the absence of such a course planned for teachers.

C. Modern Physics: A course that covers the phenomena, concepts, and experimental techniques of modern atomic and nuclear physics using mathematics through Calculus. At least 25 per cent of the course should be laboratory experience.

IV. SUGGESTED COURSES FOR THE TEACHER WHO IS PREPARING TO TEACH BOTH PHYSICS AND CHEMISTRY OR COURSES IN PHYSICAL SCIENCE

(Given in semester hours)

	A	B	C	4-year total
Physics	8	6	4	18
Chemistry				18
Biology				6
Earth Science				5
Mathematics				13
Totals				60

6. The professional education should provide to prospective teachers the following experiences and learning categorized in three groups.[10] The first group of learning necessary to all teachers regardless of their concentration in the major field should consist of:

A. An understanding of the school as a social institution: Through this understanding, prospective teachers should possess knowledge of varied bases of school control and support, and the school's role as an agent in continuous interaction with an evolving culture. They should be able to make objective judgments regarding:

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[10]Association for the Education of Teachers in Science and Cooperative Committee on the Teaching of Science and Mathematics, "Guidelines for Content of Preservice Professional Education for Secondary School Science Teachers," Science Teacher, XXXV, No. 5 (May, 1968), 88f.

(a) the history of national education; (b) basic issues and controversies in education; (c) major criticisms of the educational system and the implementation of these criticisms for the continuing evolution of the system; (d) representative philosophies of education and their implementation for educational practice; (e) process of education through which social change is initiated and/or implemented; (f) the school as an educational institution, its relationship to other institutions.

B. An understanding of the administration and organization of education.

C. Provision for individual difference: During this preparation for teaching, each individual should have an opportunity to acquire knowledge concerning: (a) the great variety of individual differences operating in the classroom; e.g., intelligence, creativity, social and cultural background, personality and interests; (b) the patterns of thought generally characteristic of students at the different developmental levels; (c) the differences in frustration and tolerance among secondary school pupils.

D. Development of an understanding and skill in general techniques of instruction, the techniques

conductive to the maintenance of a classroom climate which motivates learning and which exploits the natural curiosity of interest of youth.

E. An understanding of learning theory: Prospective teachers should recognize that effective learning results in change in behavior and involves cognitive, affective, and kinesthetic dimensions. Prospective teachers should be cognizant of different learning levels, the essential continuity in learning, and the complex interactions and associations which occur if learning is to progress efficiently.

F. A command of knowledge of Measurement and Evaluation through which the prospective teachers should understand the relation which evaluation has to instructional objectives and the profound effects of methods and types of evaluation on the future of the student.

G. Development of a sense of professional responsibilities and duties.

The second group of learning and experiences specific for all science teachers should include the following elements:

(1) An understanding of science instruction in relation to the total educational program;

(2) An understanding of purposes and contributions of science instruction;

(3) The development of skills in demonstration to techniques;

(4) Knowledge of selecting and organizing science content for instructional purposes;

(5) Using laboratory experience, maintaining, and equipping laboratories;

(6) Familiarization with basic literature of science education;

(7) Understanding of the methods of inquiry and guidance of students in the interpretation of data.

Finally, the third group of experiences, referred to individualized for the "chosen teaching field" should involve:

(1) Development of skills of independent study;

(2) Development of skills through practical experiences (observation and student teaching);

(3) Command of knowledge in designing, improving, and trying out special equipments and materials.

7. The student teaching experience be organized into these principles:

A. The student teacher should be gradually inducted to the responsibilities of actual teaching.

B. The plan of inducting the student teacher will then be from the easy to the difficult, from the simple to the complex, from observation to participation, and to long-term teaching.

C. The student teacher is to be thought of as a distinct personality, capable of growth, sensitive to success and failure, and deserving of help and consideration.

D. The student teaching activities should be conducted in as natural and typical situation as possible.[11]

8. The pattern of the professional program is the four-year distribution sequence,[12] leading toward the Bachelor's degree of Science in Science Education or Bachelor's of Arts in Science Teaching.

9. Teacher education should be a "tightly integrated, intricately interwoven, and carefully

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[11]Joseph A. Del Popolo, "Experiences a Student Teacher Should Have," The Journal of Teacher Education, XI, No. 1 (March, 1960), 76-77.

[12]Lindley J. Stiles, et al., op. cit., p. 217.

coordinated total process."[13] The program of experimental learning should begin just as early as the program of intellectual analysis, and should proceed alongside it, step by step. At every step, the two should be interwoven. Every bit of experience should fit naturally into the next step of intellectualization and every intellectual increment should enrich the next bit of experience.[14]

The Patterns of the Proposed Program of Science Teacher Education

The proposed program of science teacher education is structured with the following general pattern.

	Credits	Percentage of the Total Requirements
General Education	42	30
Professional Education	28	20
Concentration Areas:		
Major Minor	64	46
Electives	6	4
	140	100

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[13] N. V. Scarfe, Conflicting Ideas in Teacher Education (Columbus, Ohio: The College of Education, Ohio State University, 1960), p. 34.

[14] Fred T. Wilhelms, "Realignment for Teacher Education," in Association of Teacher Educators, Teacher Education: Future Directions, A Report of the Fiftieth Anniversary Conference of the Association for Student Teaching 1970 (Washington, D.C.: AACTE, 1970), p. 10.

Courses in General Education are distributed in nine different subject fields as indicated in Table 4.1. These subject fields are: Basic Mathematics, Physics, Chemistry, Biological Sciences, General Psychology, General Philosophy, Sociology, Economics, and Language.

TABLE 4.1.--Distribution of courses in General Education in the proposed program of Science Teacher Education.

	Subject Fields	Credits
1.	Basic Mathematics: Calculus, Statistics	6
2.	Physics	6
3.	Chemistry	6
4.	Biology	6
5.	General Psychology	3
6.	General Philosophy	3
7.	Sociology	3
8.	Economics	3
9.	Language	3
	Total Requirements	42

In view of the profound influence of the sciences on modern life, a first-hand knowledge of more than one of them is essential to liberal education.

Biology will deal with living things both in terms of their development, behavior, interaction with environment and process and substance that compose each living system.

Chemistry will be concerned with composition and change in composition and properties of all substances

under the influence of temperature or pressure or interaction with other substances.

Physics has as its aims the development of systems and their interactions. These are dealt with in terms of gravitational interaction, electric charge separation, energy transfer, storage, and distribution.

Mathematics will provide prospective teachers an acquaintance with mathematical techniques which include basic principles of differential and integral calculus, and some knowledge of probability and statistics.

In addition, Sociology will deal with examination of general features of cultural and social life in complex civilization. This approach leads to better understanding of process and principles of sociology (social role and culture conflict, personality and culture interaction, collective behavior development, interaction and social process, accommodation and social organization) that are alike and that are different from one part of mankind to another. This helps the student see himself, his groups, and his society in a meaningful relationship to each other.

General Philosophy will concern philosophic thinking through the examination of problems of freedom, knowledge, and value, and to such problems in politics, religion, and what is worthy of consideration.

General Psychology will deal with a basic survey of the principles of human behavior, maturation,

motivation, sensory and perceptual processes, learning and thought, and of the application of psychology to practical problems of life.

Economics will familiarize student teachers with fundamental economic principles and develop in them an understanding of critical economic problems facing the country and the world today.

Finally, the mastery of a foreign language is desirable in the proposed program for science teachers, since recently college students are required to demonstrate their proficiency in a non-native language for their graduation. The objectives of teaching foreign languages to prospective teachers are to provide them the ability (1) "to understand the foreign language when spoken at an average rate of speed by a native speaker[,] (2) . . . to respond intelligently in a reasonable conversational situation[,] and (3) . . . to read materials of moderate difficulty in the general areas of human knowledge."[15]

The proposed range of professional education courses for prospective secondary school science teachers runs from twenty-seven to twenty-nine semester hours. The distribution of these professional courses is as follows:

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[15]G. K. Hodenfield and T. M. Stinnett, op. cit., p. 50.

TABLE 4.2.--Distribution of professional courses in the proposed program of science teacher education.

	Courses	Credits
1.	Introduction to Education	2
2.	Educational Psychology	3
3.	Educational Philosophy	3
4.	Methods of Teaching	3
5.	Educational Sociology	2
6.	Communication-Speech	3
7.	Measurement and Evaluation	3
8.	Observation	1
9.	Practice-teaching I and II	4-5
10.	Internship	3-4
	Total Requirements:	27-29

The following are the objectives and the descriptions of the courses in professional education:

1. Introduction to Education. Orienting the prospective teachers to teaching and the teaching profession, to problems and trends in modern education, to ethics of the profession and finally to the teacher's relationship to the community and professional organizations.

2. Communication-Speech. Helping the prospective teachers acquire the clearness, the correctness, as well as the effectiveness and the logic of expression.

3. Educational Psychology. Providing to the prospective teachers an understanding of the growth and development of the child, the learning process,

individual differences, and social and motivating factors of adjustment as they contribute to education.

4. Educational Philosophy. Helping the student teachers (1) understand how different philosophies affect education, (2) examine how far the present educational system in any country is based on or related to its own philosophies, (3) understand the philosophies of aims, organization, and practice of education in the country, and finally (4) cultivate the spirit of inquiry with regard to problems of education and develop the ability to relate them to philosophical principles and methods.[16]

Methods of Teaching. This course will include both general methods and methods of teaching in a special field, i.e., science. It is aimed to help the prospective teachers:

1. Understand the application of principles of psychology to classroom teaching, i.e., diagnosing, planning, and maintaining effective learning climates;

2. [Acquire knowledge in] formulat[ing] an acceptable statement to which he is committed regarding the purpose of the teaching of science in the secondary school;
3. [Acquire skill in] develop[ing] procedures for the teaching of science which encourage autonomous inquiry;

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[16] Curriculum Development in Teacher Education in Asia, op. cit., p. 38ff.

4. Understand the planning and use of appropriate classroom management techniques, e.g., laboratory planning, demonstration teaching, student activities, daily and extended lesson plans;
5. Be able to apply suitable criteria for selection of general instructional materials, and specialized materials for science instruction;
6. Be aware of the technological resources available to teachers, e.g., films, transparencies, laboratory and demonstration equipment, and other audio-visual aids;[17]
7. Realize that method is essentially personal to every teacher and that teaching involves the manipulation of a number of techniques as occasion demands.
8. Finally, build up a creative approach toward teaching.

Measurement and Evaluation. This course is intended to develop in the prospective teachers the abilities:

1. To evaluate tests in terms of reliability, validity, and usability;
2. To prepare and select appropriate evaluation instruments for the assessment of student performance with regard to the educational objectives;
3. To interpret test results in a precise and meaningful way;

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[17]Association for the Education of Teachers in Science and Cooperative Committee on the Teaching of Science and Mathematics, op. cit., p. 90.

4. To diagnose students' weaknesses and undertake remedial teaching work.[18]

Educational Sociology. This course will help student teachers understand (1) social processes and interaction patterns in educational organizations, (2) the relationship of such organization to aspects of society, social class, and power, (3) social relations within the school, college, and university, (4) role of teachers, students, and administrators.

Practice. Organized under the guidance of supervisors, it is designed to help student teachers (1) see how theory is related to "reality," and (2) prepare them to "assume, with a measure of confidence and competence, the multifarious tasks and duties of their calling."[19] It consists of three steps: observation, practice-teaching, and internship.

Observation. This course is planned to provide prospective teachers direct contact with pupils and is defined as a guided observation. In this course, different aspects of Educational Psychology to be focused on are outlined in advance by the supervisors. After each period of observation, a short written report,

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[18] Curriculum Development in Teacher Education in Asia, op. cit., p. 50.

[19] Ibid., p. 59.

from prospective teachers, to compare what they have observed to what they have learned in theory, is necessary.

Practice-Teaching I. The first course in practice teaching is referred to as a tutorial period where the prospective teachers are assigned to work with a cooperating teacher, help him prepare demonstration techniques, and organize and direct laboratory work. During this period of practice teaching,insight into such aspects as motivation of learning, and raising of effective questions should be made. For the introduction to the Methods course a short period of fifteen minutes of teaching is also encouraged.

Practice-Teaching II. The provision of the second course in Practice-teaching parallel with the Methods course is made with the purpose of offering to prospective teachers the opportunity to apply immediately what they have learned, concurrently develop in them the need for a deeper study in this course of Methodology, i.e., while a student teacher does his practice teaching, he is facing some problems that he does not know how to solve; he goes back to the Methods course for the solutions.

This practice teaching consists of two periods. Each period involves two sections of two hours practice each. The first period starts in the fourth week of the semester. The second period takes place near the

end of the semester and is designed to help prospective teachers see how they improve in the profession. For this course the following points will be focused:

1. Planning lessons and teaching;
2. Understanding pupils and their learning activities;
3. Selecting, devising, and preparing the teaching materials and aids;
4. Practicing creative approaches toward teaching;
5. Diagnosing the scholastic difficulties of pupils and providing remedial instruction for those who need them.

Finally, to permit prospective teachers to be familiar with and to understand pupils, the same class should be used for at least two sections of practice teaching.

Internship. Since a few hours of practice teaching is insufficient (1) to develop in prospective teachers necessary skills for the teaching job and (2) to permit them to get insight into such areas as public relationships, school administration, and organization, the internship is designed to provide to prospective teachers more opportunity to grow in their profession under the guidance of experienced supervisors.

With four semester credits of this internship, student teachers are required to spend eight weeks, with sixteen clock hours a week, in the cooperating schools. During this internship, the prospective teachers might be placed in charge of the teaching of one class (with, for instance, two or three hours of teaching per week). He is required to participate in all the activities of the school and is encouraged to especially focus on the following areas:

-- Making effective use of local resources and materials;
-- Preparing and administering evaluation tests;
-- Using appropriate means for assessing the effectiveness of his teaching as well as the progress of his pupils;
-- Carry out effectively the duties and responsibilities involved in school organization and management;
-- Establishing good human relations with students' parents and other members of the community;
-- Acquiring desirable professional attitudes.

Regarding concentration areas, the proposed program is divided into the following sections:

a. Physical Sciences:
   -- Major in physics with minor in chemistry, or in mathematics or in earth sciences;

-- Major in chemistry with minor in physics or in mathematics or in biology.

b. Mathematical Sciences:

-- Major in mathematics with minor in physics, or in chemistry.

c. Biological Sciences:

-- Major in biology with minor in chemistry or in earth sciences.

Details of the requirements for each individual proposed program for each section are reported in Table 4.3. A model of the proposed program, i.e., section Physical Sciences with major in physics is presented in Table 4.4. This model pattern is structured after a four-year program consisting of eight semesters. Students are required to carry a semester academic load ranging from sixteen to twenty credits.

Evaluation of the Proposed Program for Secondary Science Teachers

The comparison with the actual programs of secondary science teacher education, in both the Faculties of Pedagogy of Saigon and Cantho, leads to the following remarks in favor of the proposed program:

TABLE 4.3.--Requirements of the proposed program for secondary science teachers, according to different sections and majors.

Areas of Subject Field	Physical Sciences Major: Physics	Physical Sciences Major: Chemistry	Mathematical Sciences Major: Mathematics	Biological Sciences Major: Biology
General Education	42	42	42	42
Professional Education	28	28	28	28
Additional Mathematics	15-18	9-15	9-15	9[f]
Biochemistry	3[b]	3	3[b]	3
Major	31	30-36	37-40	37-46
Minor	15[a]	15[c]	15[d]	15[e]
Free Electives	6	6	6	6
Total Requirements	140	140	140	140

[a]Minor may be chemistry, or mathematics, or earth science.

[b]Three credits are required for chemistry minor.

[c]Minor may be physics, biology, or mathematics.

[d]Minor may be physics or chemistry.

[e]Minor may be chemistry or earth science.

[f]Nine credits are required for chemistry minor.

TABLE 4.4.--Proposed model program for secondary science teachers, Section: Physical sciences, major physics.

First Year			
First Semester		**Second Semester**	
Basic Mathematics	6 credits	General Philosophy	3 credits
College Physics I	3 credits	Biological Science I	3 credits
College Chemistry 2	3 credits	College Physics II	3 credits
Additional Mathematics I[a]	3 credits	College Chemistry I	3 credits
General Psychology	3 credits	Additional Mathematics II[a]	3 credits
Introduction to Education	2 credits	Major	3 credits
	20 credits		18 credits
Second Year			
First Semester		**Second Semester**	
Educational Psychology	3 credits	Educational Philosophy	3 credits
Observation	1 credit	Additional Mathematics V[a]	3 credits
Biological Science II	3 credits	Major	6 credits
Additional Mathematics III[a]	3 credits	Minor	3 credits
Additional Mathematics IV[a]	3 credits	Languages	2 credits
Major	3 credits		17 credits
Language	2 credits		
	18 credits		
Third Year			
First Semester		**Second Semester**	
Communication-Speech	3 credits	Methods of Teaching	3 credits
Practice Teaching I	2 credits	Practice Teaching II	3 credits
Major	6 credits	Major	6 credits
Minor	3 credits	Minor	3 credits
Sociology	3 credits	Elective	3 credits
Language	2 credits		18 credits
	19 credits		
Fourth Year			
First Semester		**Second Semester**	
Economics	3 credits	Internship	3-5 credits
Measurement and Evaluation	3 credits	Minor	3 credits
Educational Sociology	3 credits	Elective	3 credits
Major	6 credits		9-11 credits
Minor	3 credits		
	18 credits		

[a]Additional to General Education.

1. The distribution of the requirements for general education, professional education, concentration in major and minor, and electives, appears more rational in this program than is now offered at the Faculties of Pedagogy; (1) there exists an integration between different components of the program; (2) difficulty and complexity of practice-teaching and professional course content are introduced gradually through the four-year curriculum (for example, the course in Introduction to Education is given first, then the next steps will be, in this order; Educational Psychology, Educational Philosophy, Methods of Teaching, Evaluation; finally, the course in Educational Sociology will end the period of professional preparation and get the student teachers ready for the internship.); (3) continuity of learning is provided.

In addition, a comparative approach between the above studied programs (Table 3.16, 3.17, 3.18, 3.19), and this proposed one shows the following differences:

Field Subjects	Credits (Semester hours)		Percentage to the Total 4-Year Program Requirements	
	Current Programs of the Faculties of Pedagogy	Proposed Program	Current Programs of the Faculties of Pedagogy	Proposed Program
General Education	0	42	0	30
Professional Education	23[a]	28	22	20
Concentration in Major and Minor	53[a]*	64**	78	46
Electives	0	6	0	4

[a]Based upon a conversion of one year-credit (of 30 weeks) to a semester-credit (of 17 weeks).

*Beyond an average of 18 semester-credits provided in the propaedeutic year.

**Beyond the background of general education.

The reason for including general education has been previously discussed (Chapter III and IV) as purposeful to the intellectual growth of the individual.[20]

The total requirements for professional education of the current programs are comparably low as referred to the proposed one. Furthermore,

[20]Lindley J. Stiles, et al., op. cit., p. 164; See also T. R. McConnell, ed., A Design for General Education (Washington, D.C.: American Council on Education, 1944), p. 56; T. R. McConnell, et al., "General Education," Encyclopedia of Education Research, ed. by Walter S. Mourse (New York: MacMillan Co., 1950), p. 489; B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 20.

the introduction of elective courses into the proposed curriculum is of great benefit to the student teacher since he may want either to deepen or to broaden his knowledge and professional understanding or to provide himself education for his later leisure time.

2. The requirements for major and minor fields of the proposed four-year program of secondary science teacher education seems in accord with that proposed by many educators.[21, 22, 23, 24]

3. Professional courses of the proposed program of secondary science teacher education are planned to provide:

   a. An understanding of the teacher's role with regard to the wide range of students' abilities at different age levels and with varying interests;

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[21]James V. DeRose in a conference on science education, Guidelines for Improving College Science Programs, Report of (Harrisburg, Penn.: The Pennsylvania Academy of Science, 1964), p. 16.

[22]G. K. Hodenfield and T. M. Stinnett, op. cit., p. 49.

[23]John S. Richardson, et al., op. cit., p. 265.

[24]Alfred B. Garrett, et al., op. cit., p. 283 ff.

b. A knowledge of learning theories which are fundamental to good teaching; hence, it would enhance the teaching-learning process;

c. An understanding of human relation principles and social foundations that provide insight into learning problems.

Thus, these professional courses would expose the prospective teachers to a sequential learning and practicing. This development of a professional education sequence structured around pertinent concepts is desirable, as education "must . . . assure young people of preparation for social change."[25]

4. The proposed secondary science teacher education program indicates a flexibility in organizing various programs in different sections and majors, without much affecting the total requirements for the degree. This contrasts to the rigidity of the existing programs in Faculties of Pedagogy.

Summary of the Chapter

In this chapter, from a review of the current trends in teacher education in Vietnam, the proposed

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[25]Lindley T. Stiles, op. cit., p. 12.

secondary science teacher program first deals with the objectives, then the assumptions that would allow the presentation of the proposed pattern of the program of science teacher education. The evaluation of this proposed program indicates several basic criteria that provide further implementation of the program itself.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary of the Findings

There is a general trend in most Southeast Asian developing countries in improving their teacher education system to place major emphasis on professional education since teaching is considered as a professional career.

The findings of this comparative study indicate that (1) the common pattern of the program of secondary science teacher education is usually presented as follows: (a) general education, (b) professional education, (c) concentration in major and minor fields, and (d) electives; (2) an internship program is necessary to provide to prospective teachers professional maturation; and (3) the appropriate period of teacher education requires at least four years beyond high school graduation.

The Proposed Model Program of Secondary Science Teacher Education

With the assumptions that (1) teachers should be broadly and liberally educated persons, (2) student

teaching should be organized into these principles: graduation from easy to difficult and simple to complex, commitment to learning; (3) teacher education should involve four years, and (4) its curriculum should be an integrated one.

The proposed program of secondary science teacher education then consists of four basic components, namely: (1) general education, (2) professional education, (3) concentration in major and minor, and (4) electives. The total requirements for the degree are 140 semester credits, distributed quasi-equally through eight semesters; students ought to carry each semester a minimum academic load of sixteen credits. The evaluation of this proposed program of secondary science teacher education shows that (1) the distribution of the requirements for the degree of Bachelor of Science in Science Education or Bachelor of Arts in Science Teaching is reasonable and logical with regard to the students' academic load, (2) the requirements for General Education would satisfactorily respond to the implications for providing to the prospective teachers as well as to any other undergraduate college students an acceptable general and liberal knowledge, (3) the course planning is designed to provide sequential, gradual, and integrated learning-practicing processes, and (4) the proposed

program seems more flexible than that currently adopted in the Faculties of Pedagogy in Saigon and in Cantho.

Recommendations

The proposed program of secondary science teacher education, together with the work that has been underway at the Ministry of Education, imply a careful review of the status of all public institutions for teacher education and their programs. Thus, the following recommendations should be considered for the implementation of the study.

1. It is recommended that the programs for secondary science teacher education should be four-year programs leading to a Bachelor's Degree in Science Education. The requirements for the degree should be a minimum ranging from 130 to 140 semester hour credits, with a maximum of allowed academic load no more than twenty credits per semester.

2. It is recommended that a credit system be adopted at all institutions of higher education in Vietnam. This is the only means that colleges and universities can effectively serve the students and prevent them from wasting time by repeating the whole year of study in case they are not successful in one or a few courses. Furthermore, it will be the rational

criteria upon which the evaluation of the students' credentials and of the curriculum can be conducted.

3. To conduct students' teaching practice as well as the internship program, it is recommended that each department of Faculties of Pedagogy should appoint two supervisors selected among qualified and experienced secondary science teachers. It is not recommended that young graduates be appointed to supervisorships since they do not have enough experience in teaching.

4. It is recommended that a seminar in supervision be provided by Faculties of Pedagogy to orient candidates to the supervisory task. It is understood that command of knowledge of effective teaching is not sufficient to assure them insights into the profession which, in itself, also requires many other skills such as skills in clarifying intern values, the sensibility to their needs, drive, emotion, ideals, and the skills in analyzing and guiding teaching behavior.

5. It is recommended that, in order to provide science teachers knowledge in, e.g., curriculum development, counseling and guidance, educational research, etc., post-graduate courses--at the Master's degree level--be regularly

offered through the Faculty of Pedagogy's curriculum. The four-year program--even with its 20 per cent devoted to courses in professional education--still appears insufficient for teachers in terms of professional preparation in these areas.

6. It is recommended that the design for in-service courses for additional professional refreshment and updating should be undertaken and should not be considered as a mean of upgrading teachers from the Bachelor's to the Master's degree.

Conclusion

As far as Vietnam is undertaking tremendous efforts in rebuilding its national education, the programs of secondary teacher education are of paramount importance to the post-war reconstruction.

But, above all, the teacher qualifications must be the most effective factor (1) in terms of reshaping a developing country with its social trends and challenges, with its new economic activities, and (2) in terms of contributions to the teaching and training of younger generations to undertake social responsibility and individual self-improvement. To provide such teacher qualification, not only a well-balanced and organized program should be offered but also the institution for teacher

education should be no longer a "training camp" but rather a center for the education of educators.

BIBLIOGRAPHY

BIBLIOGRAPHY

Association for the Education of Teachers in Science. Cooperative Committee on the Teaching of Science and Mathematics. "Guidelines for Content of Pre-service Professional Education for Secondary School Science Teachers." Science Teacher, XXXV, No. 5 (May, 1968), 85-90.

Bass, Raymond. "Teacher Training in New South Wales and the Philippines." The Education Quarterly, XIII, No. 2-3 (October, 1965--January, 1966), 62-74.

Bộ Giáo-dục [Ministry of Education]. Chương-Trình Trung-Học 1970 [Secondary Education Curriculum]. Saigon: Bộ Giáo-dục, 1970.

Committee on Teacher Training of the National Council of Independent Schools. Preparation of Teachers for Secondary Schools. A Report of Boston, Mass.: National Council of Independent Schools, 1958.

Del Popolo, Joseph A. "Experiences a Student Teacher Should Have." Journal of Teacher Education, XI, No. 1 (March, 1960), 75-78.

Denemark, George W. "Teacher Education: Repair, Reform, or Revolution?" Educational Leadership, XXVII, No. 6 (March, 1970), 539-43.

DeRose, James V. in Conference on Science Education. Guidelines for Improving College Science Programs. A Report of Harrisburg, Pennsylvania: The Pennsylvania Academy of Science, 1964.

Đoàn, Khánh H. "A Proposed Program for the Preparation of Elementary Teacher Educators in Vietnam." Unpublished Ph.D. dissertation, The University of New Mexico, 1968.

Fagan, Edward R. "Extending the Roots of Indonesian Teacher Education." International Review of Education, IX, No. 3 (1963-1964), 278-89.

Fauchois, René. "L'Enseignement au Cambodge, au Laos, et au Vietnam." L'Afrique et l'Asie, XXCV, No. 86 (1969), 51-64.

Garrett, Alfred B., et al. "Recommendation for the Preparation of High School Teachers of Science and Mathematics." School Science and Mathematics, LIX, No. 4 (April, 1959), 281-89.

Gould, Henry. "Improving Preparation of Indonesian Secondary School Science Teachers." Science Education, XLVIII, No. 3 (April, 1964), 275-95.

Hayden, Howard. Higher Education in South-East Asia. Vol. 2. Country Profiles. Paris: UNESCO and IAU, 1967.

Hodenfield, G. K. and Stinnett, T. M. The Education of Teachers: Conflict and Consensus. New Jersey: Prentice-Hall, Inc., 1961.

Johnson, Lamar B. General Education in Action. Washington, D.C.: American Council on Education, 1952.

Johnson, Jim, and Perry, Floyd. Reading in Student-Teaching. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1969.

Kelly, Edward J.; Hermanowich, Henry J.; Smith, Herbert A. Teacher Education in Thailand: Problems and Prospects. Greeley,Colorado: University of Northern Colorado, October, 1971. (Mimeographed.)

Koelsche, Charles L. "Science Education Programs in the Developing Countries of South and Southeast Asia." Science Education, XLVIII, No. 4 (October, 1964), 344-50.

Lewis, L. W. "Getting Good Teachers for Developing Countries." International Review of Education, XVI, No. 4 (1970), 393-405.

Manalang, Priscila. Teacher Education in the Philippines. College of Education, The University of the Philippines. (Mimeographed.)

Marquis, Edouard. "L'Enseignement en Cochinchine." Revue du Pacifique, VII, No. 8 (Juillet-Aout, 1935), 463-65.

MacConnell, T. R. A Design for General Education. Washington, D.C.: American Council on Education, 1944.

_____, et al. "General Education." Encyclopedia of Educational Research. Edited by Walter S. Monroe. New York: MacMillan Company, 1950.

National Association of State Directors of Teacher Education and Certification. Guidelines for Preparation Programs of Teachers of Secondary School Science and Mathematics. Washington, D.C.: American Association for the Advancement of Science, 1961.

_____. Guidelines and Standards for the Education of Secondary School Teachers of Science and Mathematics. Washington, D.C.: American Association for the Advancement of Science, 1971.

National Commission on Teacher Education and Professional Standards. The Education of Teachers. Report of the Kansas TEPS Conference, 1959. Curriculum Programs. Washington, D.C.: National Education Association of the United States, 1959.

Nguyễn, Bổng Q. "Elementary School Teacher Education for the Republic of Vietnam." Unpublished Ed.D. dissertation, George Peabody, College for Teachers, 1967.

Ohio University Contract, USAID/Education, Semi-Annual Report. USAID Education Division, Teacher Training. (Mimeographed.)

Phi Delta Kappa. Dictionary of Education. Edited by Carter V. Good. New York and London: McGraw-Hill Company, Inc., 1945.

Pike, Edgar N. "Public and Private Education in Vietnam." Asian Culture, II, No. 2 (April-June, 1960), 79-116.

Regional Meeting of Teacher Education in Asia. Curriculum Development in Teacher Education in Asia. Final Report. Bangkok: UNESCO Regional Office for Education in Asia, 1970.

Richardson, John S., et al. "The Education of Science Teachers." Rethinking Science Education. Edited by Nelson B. Henry. Fifty-Ninth Yearbook of NSSE, Part I. Chicago: The University of Chicago Press, 1960.

Sarraut, Albert. "Sur le Developpement de l'Enseignement indigène." L'Asie Française, CXXCVIII (Janvier, 1921), 23-25.

Scarfe, N. V. Conflicting Ideas in Teacher Education. Columbus, Ohio: The College of Education, Ohio State University, 1960.

Stiles, Lindley J.; Barr, A.S.; Douglass, Harl R.; Mills, Hubert H. Teacher Education in the United States. New York: The Ronald Press Company, 1960.

The University of the Philippines. General Catalogue, 1968-1969.

Thomas, R. Murray. Teacher Education Project in Indonesia. "A History and Evaluation 1957-1966." New York: State University of New York, n.d.

Trần, Kim T. Việt-Nam Sử-Lược [History of Vietnam]. Saigon: Tân-Việt Xuất-bản, 1955.

Vũ, Ích T. "A Historical Survey of Educational Developments in Vietnam." Bulletin of the Bureau of School Service, College of Education, University of Kentucky, XXXII, No. 2 (December, 1959), 1-135.

Wilhelms, Fred T. "Realignment for Teacher Education." Teacher Education: Future Directions, Association of Teacher Educators. A Report of the Fiftieth Anniversary Conference of Association for Student Teaching 1970. Washington, D.C.: AACTE, 1970.