Dental Education in the Netherlands

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Abstract. Dental education varies throughout the world as a result of the unique circumstances and needs of each country. The dental educator can derive benefit by comparing and contrasting different systems. Dental education in the Netherlands is characterized in this paper by summarizing several of its components. Dental practice is reviewed and the development of dental education traced. The structure and functioning of a typical school of dentistry is discussed as well as admissions, student finances, curriculum, and certification. In addition, postgraduate and auxiliary education are reviewed.

There are 14 million people living in the Netherlands, a country of 14,103 square miles, approximately the size of Massachusetts and Connecticut combined. The population density is 950 per square mile in contrast to 60 per square mile in the United States, making it one of the most densely populated countries in the world. The people live predominantly (80 per cent) in urban areas, the largest of which are Rotterdam (1,061,250), Amsterdam (1,040,000), The Hague (710,420), and Utrecht (455,100). The language spoken is Dutch, although many people speak English, German, and French as well.

The Dutch economy is based on private enterprise. The gross national product in 1977 was $108.6 billion and the per capita income $7,597. The Dutch have one of the highest standards of living in the world. Although the government has little direct ownership or participation in industry, it is the economy's dominant force, using more than 50 per cent of the gross national product in its operation and service programs. The Netherlands has one of the world's most extensive social welfare systems. Services, such as those in finance and transportation, account for the largest part of the nation's income. Industrial activities, including chemicals, metalworking, and food processing, are second. Although visible and traditional, agriculture and fishing are only small contributors to the Dutch economy.

The government of the Netherlands is a parliamentary democracy under a constitutional monarch, the present constitution dating from 1814. The three basic branches of government are the Crown (Monarch, Council of Ministers, and Council of State), the States-General (two chambers of Parliament), and the Courts.

Education in the Netherlands begins as early as age four with an optional public kindergarten program. Compulsory primary education is identical to that in the United States, beginning at age 6 and extending through age 12 or grade six. Secondary education is somewhat different and several options are available depending on the career path desired. Secondary education is compulsory, however, and must extend full-time until age 16 and part-time until age 18. Vocational studies of various lengths are one option available for secondary education. Alternatively, a six-year academic university preparatory course of study may be pursued in either the gymnasium or atheneum. The gymnasium is of two types, alpha or beta. The alpha gymnasium emphasizes language studies and the beta, quantitative or scientific studies. The atheneum does not require the study of the ancient languages and accents social studies. A diploma from these types of schools leads to admission to university studies. University education is generally of five-years duration and culminates in the designation doctorandus, signifying that the individual is eligible to develop a dissertation for a doctorate in that particular field of study.

Dental Practice

The number of active dentists in the Netherlands in 1979 was 5,052, of these 495 (9.8 percent) were female. The dentist to population ratio is approximately 1:1,800 compared to 1:2,200 in the United States. Among active dentists approximately 3,850 are engaged in the full-time practice of general dentistry, while nearly 230 are practicing one of the two recognized specialties, oral surgery or orthodontics.
national law, "The Law of Reformation of University Management (W.U.B.)." This law applies not only to state but also private institutions of higher education. The university is governed by a council of elected individuals representing faculty, students, nonacademic personnel, and citizens. This body meets monthly to determine general policy. An administrative body of the council, the university board, superintends the daily functioning of the university. A Rector Magnificus presides over the board. He is the official academic representative of the university and functions in several ways similar to an American university president. The Rector Magnificus is appointed to a two-year term by the Minister of Education in state universities and by the university’s foundation or board of trustees in private universities.

The faculty of medicine and dentistry (health sciences) is divided into two components, a subfaculty (school) of dentistry and a subfaculty (school) of medicine. Both the faculties and subfaculties are organized and governed on a model similar to that of the university. Each subfaculty will elect a subfaculty council, one-half of whose members are faculty and one-half nonacademic personnel and students. This council is the highest authority of the school and is responsible for the organization and coordination of all instruction and research. It meets monthly to determine school policy and practice. The subfaculty council appoints the two legally required standing committees of the subfaculty, those of research and education. It also appoints the examination committees for the various levels of certifying examinations. In addition, the subfaculty council elects from its membership representatives to a faculty council, which is the governing body for the health sciences. To manage the daily operation of the school, a subfaculty board is elected by the council. This board is a small body composed of approximately five individuals, a majority being faculty but with a student or nonacademic staff member, or both, as well. The council elects one of the professors to the board as its chairperson. This individual, as well as all council and board members, serves for a limited term of two to three years. Although comparable in some respects to the American dean, the subfaculty board chairperson does not possess the degree of responsibility or authority generally associated with the dean’s position in an American school. In the Netherlands, academic and administrative lines are maintained separately throughout the university hierarchy and the functions vested in different individuals. Thus, many of the functions assumed by the American dean, vice-president, or president are carried out by a professional administrator in the Dutch setting. The administrator is responsible to the subfaculty council but is also directly responsible to his superior, the faculty administrator, who in turn is accountable to university administrators, all of whom are nonacademic personnel. The dean and administrator share leadership in the school. However, because the dean is elected from the professors on a periodic basis, considerable authority is accorded the administrator, who may hold the position for an extended period of time.

Traditionally, schools of dentistry have been organized into academic units variously called afdeling (departments) or institution (institutes). These departments were organized around a professor and head of the department, the hoogleraar. The title ‘professor’ designated the head of the department, since there was only one such individual in each department. This individual possessed considerable autonomy and authority in managing the affairs of the department. Recent legislation now provides for the formation of larger academic units called vakgroepen or discipline groups. The intent of the legislation is to reduce the number of small, relatively autonomous departments by merging them into larger bodies with a more democratic structure. The members of the discipline group would be formally given more of a voice in the educational and research activities of the unit than had been the case with the department. Currently, this legislation is in various stages of implementation in the Dutch schools of dentistry. A discipline group, or vakgroep, might, for example, comprise the departments of operative dentistry, periodontics, and prosthodontics. Or a single department such as orthodontics or oral surgery could be reorganized and designated a vakgroep. This mandated reorganization will make it possible to have several professors, who were formerly heads of departments, in one discipline group. Professors would maintain their title of professor but would alternately assume the responsibility of chairperson of the discipline group.

Vakgroepen are to be governed with a council and a board, similar to those used in the faculties and the university. The discipline group is the smallest academic unit of the university but it is to be an autonomously functioning body relating to the school in a manner similar to that in which the school relates to the university. The discipline group, although integrating its goals and activities with those of the school, does not relinquish its autonomy. As a consequence, there is more responsibility and authority at the departmental level and correspondingly less at the school level in the Dutch school of dentistry than would be found in its American counterpart. Interestingly, there is no formal body composed of the chairpeople of all the disciplines as is common in American schools of dentistry. The appointing of professors and heads of discipline groups remains a function of the Minister of Education for state schools or the university’s foundation for private institutions. Such appointments are made after an open search is conducted by a faculty committee, and on its recommendation.

Faculty

The faculty of a school of dentistry is composed of the professors of the various departments or discipline groups and
those who work with them in the instructional and research activities of the discipline. When individuals begin their careers in dental education they are generally assigned the rank or title of instructor. After several years of full-time effort, they advance to the rank of wetenschappelijk medewerker; literally translated this title means “fellow scientific worker or cooperator,” and is intended to relate them to the professor. Promotion to a “head scientific cooperator” is generally accomplished after several years of service, the assuming of administrative responsibility or the gaining of the doctoral degree. This rank is the highest that can be gained without being appointed professor, a rank dependent on assuming administrative responsibility for a discipline.

Part-time faculty are employed primarily for clinical instruction and generally maintain the title of instructor. Individuals having a significant commitment of time to the school may also be given responsibility for some aspects of cognitive instruction. There is a movement toward consolidation of part-time positions into full-time ones to enhance the research potential of the discipline groups and the school.

Faculty salaries are lower than those earned by practitioners although exact comparisons are difficult to make due to several factors including the value of the universities’ fringe benefit programs. Currently, salaries range from the equivalent of $24,000 for an instructor to approximately $65,000 for a professor, not including benefits.

Admissions

During a student’s final year of university-preparatory studies in a gymnasium or atheneum he or she makes application to the Ministry of Education for a position of study in dentistry. Dentistry is one of several academic disciplines of the university in which there are generally more students desiring of pursuing studies than there are available positions. To manage this situation, the Minister of Education forms a national public committee, the Nume-rous Fixus or Assigning Committee. This Committee uses a lottery system to determine which students will be granted the available positions. Each student is assigned a lottery number and is notified of this number, together with a calculated percentage chance of being accepted (assigned) that particular year. The odds of assignment are based on the number of individuals applying for the available positions and the student’s scores on final secondary school examinations, to which some weight is given in the lottery. A student with an examination average of 9 of a possible 10 would have a somewhat better chance of being selected than a student with a score of 6, which is the minimum passing score. The higher score would not, however, ensure selection over someone with a lower one.

If selected, the student would be placed in one of the country’s five schools by a Placement Commission. The student would be permitted to state a preference but would have no assurance of being able to pursue studies at the desired university. It is possible, however, to exchange placements with another individual and this is frequently done by publicly advertising for such an exchange. If not selected in the lottery process, the individual can reapply in subsequent years and in the interim pursue other studies or employment. There is no age limit for application to study dentistry and instances of older individuals applying after having pursued other studies or professions is not uncommon. The admissions and placement process is strictly apolitical. As discriminatory practices are precluded by the lottery approach, the number of women and minorities studying dentistry is a function of the total number applying. Four percent of available positions are reserved each year for foreign students.

Student Financial Assistance

Tuition and fees at Dutch universities are quite low due to the level of support received from the government. Tuition for all university students including dentistry is the equivalent of $250 (1980) each year. There is a one-time application fee of $50. The purchase of instruments and equipment averages $250 per year and is paid for with a special government stipend.

University study is subsidized by the government in the form of a stipend paid directly to the student, which is to be used for tuition and living expenses. Currently, a full stipend is approximately $5,000 per year. The actual amount of the stipend varies depending on the income and ability of the student’s parents to pay the expenses. Two years after graduation the student is expected to begin repaying 40 percent of the stipend at no interest. This portion of the stipend is repaid at the rate of 10 percent each year for ten years.

Curriculum

The dental curriculum is of five years duration. Each academic year begins in early September and concludes at the end of June. Two major holiday periods are observed, at Christmas and Easter, providing the students with three weeks of vacation during the academic year. Approximately 40 weeks or 1,600 clock hours are therefore available for instruction each year. The year is not subdivided into academic units but a flexible schedule is employed with courses beginning and ending at different junctures throughout the year.

The overall curriculum can be conceived of as three distinct categories of instruction: cognitive, psychomotor, and behavioral. During the first two years a large percentage of the available time is devoted to cognitive studies due to the inclusion of the majority of the basic biological sciences. The third and fourth years emphasize instruction
in psychomotor skills. Instruction in the behavioral sciences, though generally recognized as important, receives only a small (3-5 percent) portion of the total curriculum time. The fifth year of study is predominantly clinical (80 percent) with emphasis on the development of clinical competency, in preparation for the final examination for the title of dentist.

A typical curriculum is difficult to outline, since the curricula of the five schools vary. Basically, however, there are two curriculum types: one a traditional, departmentally-based approach, and the other a modular, interdisciplinary one. The traditional curriculum is characterized by (1) a distinct separation between the basic biological sciences and the clinical sciences, (2) teaching the cognitive and the psychomotor skills at different times in the curriculum, and (3) reserving the primary clinical experiences until the final two years, after instruction in the biological and dental sciences has been completed. This type of curriculum is employed at Utrecht and the two schools in Amsterdam.

The modular curriculum, used at the universities in Nijmegen and Groningen, has developed around problems or themes in dentistry. The module is taught by an interdisciplinary team of faculty. This modular curriculum is characterized by an integration of the biological and clinical subjects in time, the teaching of both the cognitive and psychomotor components of the clinical sciences in a unitary fashion, and the early exposure of the student to clinical treatment.*

The entire continuum of instructional methods is used by the Dutch faculty in their teaching. Methods range from the highly individualized approach employing computer-assisted and computer-managed learning to the traditional lecture format. In many instances study guides in Dutch are prepared for student learning; frequently, English textbooks and audiovisuals are employed. The libraries of all the universities contain excellent collections of the international dental literature, particularly that emanating from the United States.

Certification

Four major examinations of the student's performance are conducted during the course of study. These are not written examinations but rather a review by the professors of the student's progress during the year's courses. The Candidaatsexamen I and II are conducted at the end of the first and second year of the curriculum respectively. Grades are reported from individual courses or blocks of study on a scale of 1-10, with a score of 6 being sufficient or passing. The examinations result in a decision to permit the student to progress in the curriculum or to repeat the year if it is determined that he or she has made unsatisfactory progress. A student may not be dismissed from school but must be allowed to continue until he or she passes the necessary examinations or until a voluntary decision is made to resign. Examples of students pursuing dental studies for longer than twice the customary period of time can be cited. The government subsidy discussed previously is not paid during periods of repetition of study resulting from failure. The Doctoraalexamen occurs at the conclusion of the fourth year of study, when all cognitive instruction is essentially complete. If the student has been successful, as determined by the examining committee of professors, the degree Doctorandus (Drs.) will be awarded. The fourth and concluding examination is the Terminalexamen, conducted at the conclusion of the fifth year, or at the time when all clinical expectations have been attained. This state examination results in the awarding of the title Doctor of Dentistry.

The awarding of the Doctor of Dentistry degree by the university grants the right to practice dentistry in the Netherlands. Validation of the diploma is required by the inspector of health of the province in which the individual establishes a practice.

Postgraduate Education

As has been stated, completion of a university course of study results in the degree Doctorandus, attesting to the fact that the individual is entitled to pursue an original research activity and write a dissertation for the doctorate. For those individuals pursuing careers in dental education this is considered desirable. Usually such an individual would gain appointment to a faculty of dentistry as an instructor. After a variable period of time a research protocol would be developed with the advice and counsel of the department's professor. The individual would then be considered a promovendus and the professor the individual's promotor. Completion of a dissertation and its successful public defense before a body of professors results in the degree Doctor (Dr.), the equivalent in several respects to the American doctor of philosophy (Ph.D). This degree is the terminal degree in all disciplines of study in the Netherlands. From 1947 to 1977, 110 such degrees had been granted under the direction of the faculties of dentistry.

Postgraduate education may also be pursued for the purpose of gaining certification in one of the two recognized dental specialties, orthodontics and oral surgery. All five faculties in the Netherlands have educational programs in these areas. Both require an additional four years of full-time study. Because of the restricted number of positions available there is considerable competition for admission to these programs. Selection from among the candidates is made by the department with the professor exercising primary influence in the decision. The five programs in orthodontics generally accept four students in each beginning.
class, but classes are not accepted every year at each school. Rather, classes will be initiated at three of the schools during one year and at the other two schools the subsequent year. Currently there are approximately 40 students enrolled in postgraduate study in orthodontics. It is considered desirable though not mandatory for postgraduate students in orthodontics to pursue a dissertation during their period of study. Clinical studies, however, generally preclude this option.

Oral surgery study is similar to that of orthodontics with the primary difference being the hospital-based environment. Training consists of completing a series of clerkships. Because of this the initiation of the educational program depends on hospital scheduling and can be at various times during the calendar year. Generally one to two students will be admitted each year. In 1979–80 approximately 25 dentists were pursuing postgraduate education in oral surgery. Because of the strong clinical emphasis, oral surgery residents infrequently pursue research activities in conjunction with their studies. Completion of a postgraduate program in orthodontics or oral surgery permits the individual to practice that specialty in the country; the announcement of such a practice prohibits the person from engaging in the practice of general dentistry.

Continuing education is a relatively new concept with programming being offered only during the last several years. Discussions among government officials as to its value in improving the quality of dental care and consideration of legislation prompted the profession to launch a developmental program. The schools of dentistry are now offering courses of one or more days duration, with some consisting of multiple sessions. Several courses are participatory in nature. In addition, five times a year each school conducts a “clinical evening” for alumni and area practitioners. At these sessions three educational presentations are usually made. The district dental organizations of the Netherlands Association for the Promotion of Dentistry meet four times each year and generally two of these sessions are devoted to scientific presentations. The several special interest dental societies of the country organize and offer one or two courses for their membership each year.

Acceptance of continuing education by the practicing professional is slow due to the financial consideration of time lost from the practice and the cost involved. It is expected that continuing education will continue to grow in scope, programming, and numbers of participants. In addition, increasing governmental interest and influence will probably result in an organized, structured program for all practitioners.

**Auxiliary Education**

Several types of auxiliaries are used by the dental profession in the Netherlands. These include hygienists, dental nurses, laboratory technicians, and assistants. The Dutch system of vocational/technical/professional education, which includes preparation for careers as dental auxiliaries, is somewhat more structured than that in the United States. As has been stated, several options are available for secondary education. If a person does not wish to pursue a profession that requires the scientific education of the university, it is not necessary to attend the gymnasium or atheneum. Three other secondary options are available. One is “havo,” or higher level secondary education, and another is “mavo,” or middle level secondary education. Havo is generally of five years duration and mavo four years. Completion leads to postsecondary educational programs in the middle or higher education professions, the categories in which dental auxiliary programs are classified. The third option for secondary education is direct entry from primary school to study in lower professional education; such study leads to careers in carpentry, auto mechanics, or welding.

Dental hygiene is a two-year program similar in curriculum content to comparable programs in the United States. Four such programs exist in the Netherlands, all conducted in association with schools of dentistry. This is considered a matter of convenience and the education is considered higher professional and not a university education. Prerequisite for admission is havo. Each of the four programs enrols 20 students on an annual basis. There are approximately 300 dental hygienists in the Netherlands, who are permitted to perform tasks similar to those traditionally defined for dental hygienists in the United States.

The dental nurse is a relatively new concept. One experimental educational program established in 1973, exists in conjunction with the dental school at Nijmegen. The dental nurse curriculum may be pursued in conjunction with study for dental hygiene and would require an additional six months. Alternatively, a dental hygienist can apply for admission to the dental nurse curriculum, which would require 9 to 11 months to complete. Five individuals are accepted into the program each year. Currently there are 22 dental nurses in the Netherlands. They practice in children’s dental clinics operated by community foundations and, under the general supervision of a dentist, can provide routine preventive and restorative care for school children.

Dental assistants are trained in various ways. Three public vocational-technical schools offer three-year courses in dental assisting that would be comparable to such programs in America. In addition, two private institutions offer correspondence courses of 15-months duration. All of these formal courses require mavo and are considered middle professional education programs. In addition, many practitioners train dental assistants in their offices.
Dental laboratory technicians are generally trained in a preceptorship manner in the work environment. One private institute conducts a one-day per week, four-year curriculum for laboratory technicians. The maxo level of secondary education is required, as is employment as a laboratory technician the remaining four days of the week. The institute graduates 60–70 technicians each year. There are approximately 2,400 laboratory technicians in Holland.