HISTORY OF THE SCHOOL OF OPTOMETRY AT THE HONG KONG POLYTECHNIC UNIVERSITY

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The origin of the School of Optometry at The Hong Kong Polytechnic University can be traced to the 1970s when the Institute of Medical and Health Care was founded. The school provided only the certificate course in ophthalmic optics at that time.

In 1987, the institute was restructured as the department of diagnostic sciences, initially offering the certificate course and subsequently launching the higher certificate in optometry, certificate in optometry and professional diploma in optometry.

In the 1993-94 academic year, the department was renamed the department of optometry and radiography, signifying the importance of optometry. In 2000, its Chinese title was further renamed. In 2005-06, the department became the School of Optometry upon the restructuring of departments (Figure 1).

Dates	Head
1987-1990	Professor George Woo
1990-1995	Professor Michel A. Millodot
1995-1997	Professor Marion Edwards
1998-2007	Professor Maurice Yap Keng-hung
2007-2013	Professor Carly Lam Siu-yin
2013-Present	Professor To Chi-ho

Figure 1: Heads of Department/School of Optometry The Hong Kong Polytechnic University

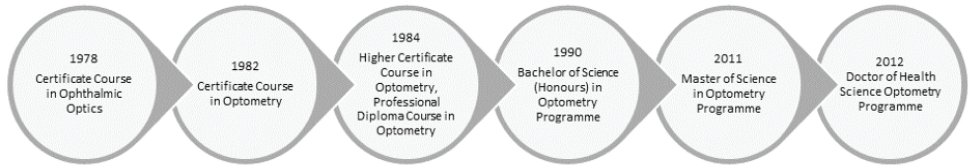

Figure 2: Timeline: Evolution of Optometric Education at The Hong Kong Polytechnic University

Developing undergraduate education for therapeutic purposes

In the 1970s, there were eye examiners but only a few optometrists in Hong Kong. The first optometry program in the territory was launched by its predecessor, the Institute of Medical and Health Care. In 2018, the school remains the only academic institution to offer optometry programs that fulfill the requirements for registration as an optometrist. It is also the sole provider of degree programs in optometry and doctorate in health science (Figure 2).

Over the past 40 years, the school has trained more than 1,200 optometrists for Hong Kong, amounting to about 60 percent of existing practitioners. The optometry clinic on campus provides professional services for patients and comprehensive clinical practice opportunities to students.

When the Institute of Medical and Health Care was first founded, it only offered full-time programs in physiotherapy, occupational therapy and diagnostic radiography. There was no full-time optometry program but a two-year part-time day release (PTDR) certificate course in ophthalmic optics.

Initially, education in optometry was targeted at the working class, especially refractionists, to raise their knowledge in optometry. In the 1982-83 academic year, the Institute launched a two-year PTDR certificate course in optometry.

In 1984-85, the institute launched a two-year PTDR higher certificate course in optometry, and the first three-year full-time professional diploma course in optometry. The former was designed to enrich the theoretical and technical standards of workers in the optometry field after they completed the first certificate course. The latter was a three-year professional education course designed for secondary school students who had matriculated with a Hong Kong advanced level qualification to acquire an understanding of optometric theories.

In the same year, the optometric clinic was founded to support learning and teaching at the institute. The clinic allowed students to engage in clinical practice and the faculty members to conduct their research, laying a solid foundation for the professional status of optometry in Hong Kong.

In 1986, the institute underwent restructuring, with the optometry and radiography programs and teaching staff grouped under the new department of diagnostic sciences. The department continued to offer professional diploma and higher certificate courses in optometry. It also maintained close connections with health-care organizations to provide students with precious practicum opportunities.

Professor George Woo, head of department from 1987-1990, championed the launch of the four-year bachelor of science (honors) in optometry program in 1990-91. In 1993-94, the department of diagnostic sciences was renamed the department of optometry and radiography.

In response to collaborative promotion by institutions and industry, the government introduced legislation for the sector in 1996, in which the 1,200 optometrists were categorized into four classes. Part I optometrists include holders of the Bachelor of Science degree in optometry awarded by PolyU; they are legally permitted to provide prescriptions and perform diagnoses. Part II optometrists include holders of the higher certificate in optometry issued by The Hong Kong Polytechnic. Part III and Part IV optometrists are required to have passed an examination. Graduates of the school have often been elected chairperson of the Hong Kong Society of Professional Optometrists, which has formed a partnership with the school in developing the optometric sector and relevant regulations.

In 2000, the department's Chinese title and degree program were further renamed; the English names remained

The Hong Kong Polytechnic University Hung Hom Campus, viewed from Hong Chong Road. By Simon Shek - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=427444

the department of optometry and radiography and Bachelor of Science (honors) in optometry. In the 2005-06 academic year, after departmental restructuring, the department became the school of optometry. It is the only university to offer a bachelor's degree in optometry in the territory. In 2011, the school launched the Master of Science program in optometry. In 2012, it launched the doctor of health science program in optometry. In 2012, the four-year bachelor's degree program was lengthened to five years to provide undergraduates with a more solid foundation.

Since 2005, all of the school's programs have been successfully transformed to include courses in therapeutic prescribing. All graduates are required to undergo clinical practice during the five semesters in the fourth and fifth years of the program, and they must be assessed and confirmed as "qualified" before they can graduate. The school's optometry programs are therefore rated as excellent and have won recognition from the Australian government in its qualification framework.

Graduates from the 2009 cohort onward can apply directly for an optometric therapeutic license in Australia. The school also attaches importance to multi-lateral exchanges for its students, and since 1987, it has been sending students on exchange programs to enrich their knowledge and experience other cultures in mainland China, Australia, Canada and New Zealand. The school places great emphasis on nurturing local scientists. Most young scholars at the school are indeed its graduates, some of whom have acquired further education overseas and then returned to their alma mater to continue the school's efforts in nurturing future optometrists.

Eye care education and blindness prevention in the community

In the 1980s, the school started to promote the "optometric check-up" to educate the public about eye care. The school also performed simple vision tests for citizens to identify vision problems as early as possible. The campaign included activities such as seminars, and eye and oral check-ups for students in cooperation with dentists, to name a few. The promotion even extended outside Hong Kong; for example, the school has provided regular eye examinations and education about eye care for victims of the Sichuan earthquake, and people in Vietnam and many provinces in China including Xinjiang.

The school has established teaching and learning platforms to collect research data through general eye care services. To encourage more non-optometry students to serve the community, the school offers eye care services training to participants every semester. In 2015, 360 non-optometry students were trained to provide 15,000 beneficiaries with the services. The school has also collaborated with 16 primary schools under Tung Wah Group of Hospitals to teach eye care knowledge and basic eye examination techniques to students. Students then regularly have simple vision tests at points set up in the school to identify vision problems as early as possible.

The Hong Kong Polytechnic founded its optometric clinic as early as 1985, supporting relevant education, clinical practice and research. Since 2000, the optometric assessment point at Tsing Yi, the optometric clinic (in collaboration with Our Lady of Maryknoll Hospital) at Wong Tai Sin, the Integrative Community Health Centre at Lai King and the Sik Sik Yuen – PolyU Optometry Centre was been founded. In 2014, the optometry research clinic was established not only to provide a platform for scientific research and clinical practice, but also to further reinforce the research strength in optometry and vision science. Teaching and learning are considered to complement each other.

In 2014, in support of PolyU's mission to nurture civic responsibility in students, the School launched a service-learning subject for all PolyU students: Learning through Providing Eye Care and Vision Health to the Community. The subject aims to prevent blindness among school children, the elderly, low-income families, people with disabilities and mental difficulties, ethnic minorities and the general public, through providing eye tests and eye care activities in the community. Over 16,000 people have benefited. The school's students also provide services for people in the Chinese mainland, Cambodia, Vietnam and so on.

In 2017, with the support of the "Vision of Love Fund," the school launched the "Vision of Love Mobile Eye Care Project" and purchased a seven-seater vehicle equipped with ophthalmic optometry equipment. The school has further extended its eye care outreach service in various districts by providing visual screening services for people in need. This project is expected to benefit about 20,000 people in its first two years of operation.

Focused research for life-long eye health

Professor Michel Millodot (1990-1995) and Professor Marion Edwards (1995-1997), in their capacity as head of school, nurtured a great research culture and led the academic staff to conduct research on certain focused areas. This resulted in a gradual increase in research publications on myopia. Professor George Woo became head of school again from 1997 to 1998, and later the dean of faculty of health and social sciences (1997–2004, 2008–2011). He affirmed

Jockey Club Innovation Tower, Hong Kong Polytechnic University, Chatham Road South Hung Hom Distrik, Kowloon. By Sebastian Wallroth, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=27695839 myopia and the aging eye as strategic focused research areas.

For several years, the school has been developing in a strategic and focused manner, and consequently it now plays a leading role in the academic field and is internationally recognized both for its teaching and research. The school's current research mainly focuses on myopia prevention (around 60 percent) and the aging eye (around 40 percent). With a clear vision and wise use of resources, the school has achieved great success and an immense output of research on myopia and glaucoma, winning high acclamation in the field. With the leadership and support of professors Woo, Millodot, Edwards, Maurice Yap, Carly S.Y. Lam and To Chi-ho in their capacity as head, the school has established an international reputation and collaborative network through research with universities in countries including Australia, Canada, the United Kingdom and the U.S. The network benefits all participating parties in their specific areas and creates a flexible platform for sharing their research.

Glaucoma is one of the leading causes of blindness. However, apart from knowing that the disease is associated with eye pressure, medical experts know little about its root cause. The school's research team presented a major finding in relation to glaucoma regarding the formation of aqueous humour and its regulatory mechanism. The finding was subsequently published in an academic journal in 1998. The team's research findings on myopia have won recognition from authoritative international bodies. In 2002, the team was ranked second in the world by an international panel. The team has also advanced orthokeratology, a technique in which the cornea is progressively reshaped using specially made contact lenses, thereby reducing children's myopia.

In addition, the team invented the Defocus Incorporated Soft Contact (DISC) lens, which effectively slows down myopia growth. This invention was supported by the Sek-Jin Chew Travel Grant of the Association for Research in Vision and Ophthalmology in 2005, and won two other prizes in 2011: the Grand Prize of The Technical University of Cluj-Napoca-Romania and the Gold Medal with Jury's Commendation in the 39th International Exhibition of Inventions in Geneva.

Researchers at the school of optometry developed the Defocus Incorporated Multiple Segments (DIMS) spectacle lens and won the Grand Prix award for being the best invention of the whole exhibition, the Prize of the Legal Company "Gorodissky & Partners" - Russia, and a Gold Medal with the Congratulations of the Jury at the 46th International Exhibition of Inventions of Geneva in April 2018.

Research on progressive lenses and bifocals has also made remarkable achievements. As early as 1996, our research team had already published journal articles on related topics. Other research teams in countries such as the U.S., Singapore and Taiwan made use of our research output, while research institutions from countries such as Australia, the U.S. and the United Kingdom have collaborated with us. Professor Torsten Nils Wiesel, Nobel Prize laureate and former president of The Rockefeller University, has expressed great attention and highly complimented our research contributions.

Prof Chi-ho To, the current head of school, hopes the school will continue to achieve the betterment of mankind. This includes achieving better control of myopia, so that everyone can enjoy life-long good eye health and no longer be troubled by problems such as progressive myopia, glaucoma and retinal detachment. He also hopes to see more of the school's research transformed into application. The research team not only improves the inventions made by others, but also has the courage to implement its own inventive research.

Acknowledgments

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