



(REVIEW ARTICLE)



## Evaluation of mastery learning and affection in the basic health and medical course of common diseases for student in Diploma Yi Jin of Hong Kong

Mary Ngan Bing Cheung <sup>1,2,\*</sup>, Wings Tjing Yung Loo <sup>1,2</sup> and Preston Corliss Loo <sup>1</sup>

<sup>1</sup> P and P Dental and Medical Sciences Ltd and Essence Medical Laboratory, Hong Kong.

<sup>2</sup> Hong Kong College of Technology.

World Journal of Advanced Research and Reviews, 2025, 26(03), 2096-2101

Publication history: Received on 11 May 2025; revised on 18 June 2025; accepted on 21 June 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.26.3.2422>

### Abstract

Evaluation of mastery learning and affection in the course “Common Diseases and Basic Pathological Changes” is to be discussed. Aging of the population and raising awareness of health cause a higher demand on the healthcare system. The ratio of medical professionals to patients in Hong Kong is lower than other developed cities. A shortage of manpower in the healthcare field has always been a concern in Hong Kong. Therefore, training people to get into the field is of importance. This course contains a lot of medical knowledge and techniques to be taught to the students so at the beginning of the course it was set to be more teacher-oriented and less weight was put on the affection of students towards patients. By use of mastery learning, heterogenous groupings and cooperative learning, the design of the curriculum would be reset to a better standard. Being a 20th-century teacher, we cannot hold on to the empirical teaching methods but rather we should keep up to the changes when teaching different topics. We are not merely teachers but facilitators. Information technology is the way to follow and we should stay up-to-date on various methods to assist in teaching. Teachers are not just to teach but may affect students for the rest of their life and their attitude towards learning.

**Keywords:** Aging; Mastery Learning; Pathological Changes; Empirical Teaching

### 1. Introduction

Aging of the population is becoming increasingly serious in Hong Kong and possibly around the world. People pay more attention to their health in general than before. Therefore, there is a higher demand on the healthcare system (Food and Health Bureau, 2010, 2018). We need concerted efforts in the long term for developing and improving the healthcare system in Hong Kong.

On the other hand, biological and medical engineering are developing rapidly, biotechnology attracts extension attention worldwide. Many novel medical technologies have been developed to prevent or cure diseases, making a big step in improving our health. Besides, Hong Kong has always been renowned for its leader role in the medical field among the world. We have a comprehensive healthcare system and affordable treatment costs. These have attracted many patients from the mainland for instance to come to Hong Kong for medical treatment. But this has certainly increased the burden on the workload of the medical professionals. More personnel with the knowledge of healthcare and biotechnology are required in order to fulfill the increasing number and need of patients as well as to develop a better healthcare system (Food and Health Bureau, 2010; 2018).

\* Corresponding author: Mary Ngan Bing Cheung

According to the annual report of Hong Kong, the government put a large sum of money annually to support increasing medical needs of the society since year 2000, and the rate of educating medical professional manpower has also increased ( Kong Year Book , 2018).

The serious shortage of health care workers in Hong Kong in recent years is due to the fact that the government has neglected and under-estimated expansion of people's needs for public health. The ratio of medical professionals to patients in Hong Kong is lower than other developed cities (Emily Tsang, 2017; Albert Cheng, 2018).

The Hong Kong Academy of Nursing pointed out that the ratio should be 1 nurse serving 4 to 6 patients in a hospital ward according to the international standard, but there is 1 for 10 in Hong Kong's public hospitals. (Emily Tsang, 2017; Albert Cheng, 2018).

There is a total of 52,389 nurses in Hong Kong which is equivalent to 7.1 nurses per 1,000 people in our population. This number is much lower than Lithuania, an underdeveloped country in 2016 according to the report of Organisation for Economic Co-operation and Development. The field of nursing is exercising protectionism as much as the other health professional in Hong Kong (Emily Tsang, 2017; Albert Cheng, 2018).

To fill the gap that is essential to train the health care workers locally and recruit more people from various background.

A notice was put up by Department of Health in Hong Kong due to the lack of manpower, hence our program was set to train and provide more newcomers to enter the healthcare team.

The elective cluster that I teach is under Diploma Yi Jin including 1) Introduction to Human Anatomy and Physiology, 2) Common Diseases and Basic Pathological Changes and 3) Application of Basic Biotechnology. They are accredited as quality framework (QF)-recognized level 3. The aim of the diploma is to give the students fundamentals of human body structure (anatomy), the operation of various systems of the body (physiology) and analysis of different metabolic activities at a molecular and genetic level (biotechnology). The cause and diagnosis of some common diseases in Hong Kong were discussed in order to empower the knowledge of primary health care. There is a total of 15 units for each of the course mentioned above, each unit consists of two lessons which are conducted in 2 hours. The teaching methods include lecturing, case studies, group discussion and audio-visual means. The students will be assessed on class work, homework, reports of case study, together with mid-term and final exams. Hopefully in view of the above, the students will be able to classify some pathological diseases and make diagnosis of diseases by means of biotechnology. The details of the cluster synopsis can be found in Appendix 1. Most of the graduates have been working at different clinics or medical centres as clinic nurses, some of them will pursue studies in nursing schools or hospitals.

This cluster made use of Bloom's Taxonomy of Educational Objectives to train students to recall and understand factual information, apply theories and concepts in new situations and finally they will be able to show an understanding of the information by breaking the materials into parts (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956).

---

## 2. Problem in current curriculum

We modified and simplified traditional medical school's courses namely anatomy, physiology, biochemistry and pathology to develop this curriculum (Yeung, Lam, Leung & Lo 2012). The development of curriculum had been more than several hundred years, we simplified them as: courses of study, courses of content, a study plan, a document of teaching or learning, a set of objectives, experiences in learning, outcomes of study, opportunities of study, a course of study offered by an institution and the wisdom of expertise (Brady, 1995; Marsh, 1997; Pratt, 1980; Su, 2012; Tom, 1984; Wood & Davis, 1978; Yeung *et al.*, 2012).

Therefore, to develop a curriculum that may involve learners, teachers, teaching materials, and the institutions (Su, 2012; Chen, 2007; Yeung *et al.*, 2012), its content should affect by culture, cultural beliefs, social situation, economic conditions and policies of country (Yeung *et al.*, 2012; Su, 2012; Nieto, 2007).

I would like to concentrate on discussing the problems encountered in the course Common Diseases and Basic Pathological Changes other than the other two courses because this course is more focused on the interaction between healthcare providers and patients. Sophisticated skills required by the healthcare personnel comprises imitation, repetition of techniques then adaptation. Affection is another important issue regarding primary care providers and it encompasses receiving, responding, valuing and organizing. This course no doubt conveys a lot of information and techniques to the students, however, ethics and morality seem to have been touched on to a lesser extent. In view of the

primary care providers we encounter every day, the sense of empathy as well as caregivers with affection are highly appreciated by patients and their family.

Our students come from a diverse background, and some of them have not studied any scientific subjects in their secondary school. They might encounter difficulties in understanding the content we taught during the class, even though in this course we mostly used case studies and questions were raised to trigger the students to think about the theories behind. However, the current set of questions might not be sufficient to take care of students at different levels.

The exiting problem of the courses is that we assumed that students should get all information we taught and they would be able to handle all procedures in the practical sections, e.g. the blood pressure measurement. The summative assessment was performed at the end of the lesson, the students could not demonstrate the real ability in manipulating the techniques.

In this course, there are 3 units relating to cardiovascular diseases, the focused diseases include hyperglycemia (diabetes), hypertension and hyperlipidemia. I will discuss the teaching plan of hypertension in this context. Prior to this course the students already have completed the course relating to the basic knowledge of cardiovascular system.

The design of this curriculum largely relies on the social orientation, adapting to the needs of the healthcare system in the society so that the students can apply the knowledge received in this course to their work as a healthcare provider (Yeung *et al.*, 2012). Social adaptation is concentrated on society requirements and basically served the needs of different groups of population (Yeung *et al.*, 2012).

---

### 3. Solve the exiting problem and revised curriculum

The design of this curriculum has been based on health worker training policy set by Hong Kong Government. The goal is to continually train and provide different levels of workers to local healthcare system. The three courses allow students to learn the information required to fit and satisfy the needs of being a healthcare provider.

The design of these courses is due to a high demand of healthcare workers in the future, they need to be trained to obtain the required analytical abilities.

A well-designed curriculum should be mixed with organization from vertical and horizontal moulds. The organization of our courses cover vertical direction with continuity and sequence from simple to complex level of structures (Yeung *et al.*, 2012; Oliva, 2009); for example we teach a single cell (cardiac cell), similar cells forming a type of tissue (cardiac tissue), a group of tissues establishing an organ (heart), an organ linking to another organ to build a system, and then a network of systems becoming a human structure (Marieb & Katja, 2014).

The courses provide the horizontal ways of learning to students when we teach the systems of the body which may affect each other, for example when the digestive system digests food which is absorbed into micro elements (glucose) into blood, the glucose level in blood will stimulate endocrine system to release insulin from beta cells of the pancreatic islets and then the glucose will be reduced to normal range by insulin (John, 2010; Stryer, 1995).

We made use of the Problem-Base-Learning (PBL) technique to teach hypertension. It is a teaching method that sometimes a real case could be used to stimulate student's learning of a certain theory and the problem would promote students to find deeper understanding of concepts and group students together to solve the problem (Grasha, 1996; Duch & Allen, 2001). Case studies are adopted to students to learn cardiac-vascular system in healthy status previously and then they are presented with a pathological case with diagnosed hypertension. The pathological changes associated with hypertension and also the complications are discussed.

The essential tool to measure blood pressure and monitor the alternation of it will also be taught. As we mentioned in previous sections, our students are from different educational background, personalities, goals, and needs but they mainly concern that they can continue study in healthcare field and some of them want to find a stable job in this field. We have discussed our current courses to satisfy most criteria before, but we have not discussed the details of hypertension. Therefore, the mastery learning method would be more suitable for teaching this course. Due to the fact that Carroll (1963) reported there were no difficulties for any students or learners to learn if the teacher would allow the time to study and split the concepts into pieces, every healthy learner would be successful in taking in the basic knowledge through this kind of method.

Bloom (1984) and Yeung (2012) believed that if the students need to achieve high level studies for teacher to teach and get feedback (1<sup>st</sup> assessment) at first and then the students would be individually corrected to have parallel second assessment to achieve specific learning goal.

The revised or modified lesson plan (Appendix 3) has been done according to Bloom (1984) and Yeungs' (2012) reports, teacher will give lecture for about 25 minutes and the students will raise questions to assess their understanding. The questioning will be based on the 25 minutes teaching contents and the question types are referring to Bloom's Taxonomy Bloom's Taxonomy of Educational Objectives Bloom (Bloom *et al.*, 1956), and also following Lewis (2007) suggestions, the questions should have clear meaning, state simple, brief, with a specific purpose, stimulate students' thought and response, limited in scope and adopt to the level of the students.

The current evaluation made use of Tyler's Evaluation Model (1949) emphasizing goals and objectives. The objectives include class demonstration, tutorials, case studies, group discussions, class and homework, special issues related to the topic, making use of audiovisual and social media channels. What is good about this evaluation method is that it is systematic and multi-purpose. The downside however, it is restricted to the goals set, other outcomes may be neglected, teach-student interaction may be underestimated. This course is composed of theories and practicals in similar proportion so it would be better to make use of the Countenance Model concentrating on knowledge, skills and attitude (Stake, 1967, Yeung *et al.*, 2012).

In order to make every student learn the content of hypertension and blood pressure measurement, heterogeneous grouping and cooperation, based on student ability is more beneficial for student achievement and student satisfaction. Students may be of various level of ability in class (Watson & Marshall, 1995). For our class, 8 groups were formed and each group consists of 3 members, a group leader is assigned with previous experience in Biology or Science subjects. The leader and members will help each other in learning, answering questions and marking the procedures as well as recording the readings of blood pressure (Appendix 3).

A sense of empathy is crucial to any healthcare provider as they are in the front line in dealing with patients (Ashcroft, Dawson, Draper & McMillan, 2006).

In order to put more weigh on the moral and ethical aspects, the teaching plan needs to be reset to accommodate these. For instance we may ask the students to perform the procedures more than once so that they may feel the discomfort, in return we allow the students to understand they should complete the procedure as best as they could to reduce the distress caused to the patients.

---

#### **4. Conclusions**

The design of the curriculum is fundamental to a teacher in setting his/her teaching plan. This encompasses the definition, elements, models, structure and evaluation of the curriculum. In previous teaching plan, I concentrated on teacher oriented teaching. When these are formed, I hope to present the knowledge and skills of this course to the students in a better way so that they can apply these confidently. Another point I would like to emphasize is that understanding the feelings of patients are of key concern to any healthcare provider apart from giving the care they need. These are achieved by mastery learning, heterogenous groupings and cooperative learning.

Being a 20th-century teacher, we cannot hold on to the empirical teaching methods but rather we should keep up to the changes when teaching different topics. We are not merely teachers but facilitators. Information technology is the way to follow and we should stay up-to-date on various methods to assist in teaching. Teachers are not just here to teach but may affect a student for the rest of their life and their attitude towards learning (Tsisana, 2015).

---

#### **Compliance with ethical standards**

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

## References

- [1] Albert Cheng. (2018. 22 February). Hong Kong's struggling public hospitals need a transfusion of doctors and nurses from overseas. South China Morning Post. Retrieved from <https://www.scmp.com/comment/insight-opinion/article/2134267/hong-kongs-struggling-public-hospitals-need-transfusion>
- [2] Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay Company.
- [3] Bloom, B.S. (1984). The 2 sigma problem: the search for methods of group instruction
- [4] as effective as one-to-one tutoring. *Educational Researcher*, 13 (6), 4–16.
- [5] Brady, L. (1995). Curriculum development. Sydney: Prentice Hall.
- [6] Carroll, J.B. (1963). A model for school learning. *Teachers College Record*, 64, 723–733.
- [7] Chen, Y.-U. H. (2007). The role of culture in an EFL curriculum of the 21st century. Selected Papers from the Sixteenth International Symposium on English Teaching (pp. 119-129), Taipei, Taiwan: Crane.
- [8] Duch, B. J., Groh, S. E, & Allen, D. E. (2001). The power of problem-based learning. Sterling, VA: Stylus.
- [9] Emily Tsang. (2017. 14 June). Hong Kong faces medical manpower crisis, government study warns. South China Morning Post. Retrieved from <https://www.scmp.com/news/hong-kong/health-environment/article/2098354/hong-kong-faces-medical-manpower-crisis-government>
- [10] Food and Health Bureau (2010). Primary Care Development in Hong Kong: Strategy Document. Food and Health Bureau, Hong Kong Special Administrative Region. Retrieved from [https://www.fhb.gov.hk/download/press\\_and\\_publications/otherinfo/101231\\_primary\\_care/e\\_strategy\\_doc.pdf](https://www.fhb.gov.hk/download/press_and_publications/otherinfo/101231_primary_care/e_strategy_doc.pdf)
- [11] Food and Health Bureau (2018). TOWARDS 2025. Strategy and Action Plan to Prevent and Control Non-communicable Diseases in Hong Kong Summary Report. Food and Health Bureau, Hong Kong Special Administrative Region. Retrieved from [https://www.chp.gov.hk/files/pdf/saptowards2025\\_summaryreport\\_en.pdf](https://www.chp.gov.hk/files/pdf/saptowards2025_summaryreport_en.pdf)
- [12] Guskey, T.R. (2015). Mastery Learning. *International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, Volume 14, 752–759, Elsevier Ltd. Retrieve from <http://dx.doi.org/10.1016/B978-0-08-097086-8.26039-X>
- [13] Hong Kong Special Administrative Region (2018). Hong Kong Year Book, Chapter 9. Retrieved from <https://www.yearbook.gov.hk/2017/en/>.
- [14] Grasha, A. F. (1996). Teaching with style: A practical guide to enhancing learning by understanding teaching and learning styles. Pittsburgh: Alliance Publishers.
- [15] John W. Ridley (2010). Essentials of Clinical Laboratory Science. Cengage Learning, Published on Jul 13.
- [16] Lewis, G. (2007). Teenagers. Oxford University Press.
- [17] Marieb, Elaine N. & Katja Hoehn (2014), Anatomy and Physiology, Pearson.
- [18] Marsh, C. J. (1997). Perspectives: Key concepts for understanding curriculum 1. London & Washington, D.C.: The Falmer Press.
- [19] Nieto, S. (2007). Affirming diversity: The sociopolitical context of multicultural education (5th ed.). Boston: Pearson education.
- [20] Oliva, P. F. (2009). Developing the curriculum (7th Edition), MA: Allyn & Bacon.
- [21] Pratt, D. (1980). Curriculum design and development. New York: Harcourt Brace Jovanovich, Inc.
- [22] Ashcroft, R E., Dawson, A., Draper, H and McMillan, J.R. (2006). *Principles of Health Care Ethics*. 2ed. Published:15 June
- [23] Print ISBN:9780470027134 |Online ISBN:9780470510544 |DOI:10.1002/9780470510544
- [24] Schneider, A. S. & Szanto P.A. (2014). Pathology. *Wolters Kluwer Health / Lippincott Williams & Wilkins*.

- [25] Scott B. W. and Marshall, J. E. (1995). Heterogeneous Grouping as an Element of Cooperative Learning in an Elementary Education Science Course. *School Science and Mathematics*. Volume 95, Issue 8, Pages 401-405.
- [26] Stake, R. (1967). The Countenance of Education Evaluation, *Teachers College Record*, 68,7.
- [27] Stryer, L. (1995). Biochemistry (Fourth ed.). *Freeman and Company*, New York,. 773–74.
- [28] Su, S.W. (2012). The Various Concepts of Curriculum and the Factors Involved in Curricula-making. *Journal of Language Teaching and Research*, Vol. 3, No. 1, 153-158. doi:10.4304/jltr.3.1.153-158
- [29] Tom, A. R. (1984). Teaching as a moral craft. *Longman*, New York.
- [30] Tsisana Palmer (2015). *Characteristics of a 21st-Century Teacher*, June 20, Retrieve from <https://www.edutopia.org/discussion/15-characteristics-21st-century-teacher>
- [31] Tyler, R.W. (1949). Basic Principles of Curriculum & Instruction. *The Univ. of Chicago*, Chicago.
- [32] Wood, L., & Davis, B. G. (1978). Designing and evaluating higher education curricula. AAHE-ERIC/Higher Education Research Report No. 8, *The American Association for Higher Education*, Washington, D. C.
- [33] Yeung, S. Y., Lam, T. S., Leung, W. L. and Lo, Y. C. (2012). Curriculum change and innovation. *Hong Kong University Press*, Hong Kong.