Life influences life
Teaches every lesson whole-heartedly

Awardee

WONG Yiu-fai (Years of teaching: 12 years)

School

Cheung Sha Wan Catholic Secondary School

Teaching Targets

Form 4 to Form 7 (Physics)

The Beliefs of Teaching

"It is the most important for a teacher to inspire and influence students in teaching and help them explore their interests and abilities in learning. This is the real meaning of teaching."

Interview with the Teacher

▲ **Mr Wong Yiu-fai has designed many experiments and learning activities which have aroused students' interest and motivation in studying Physics.**

Good teachers can pass on knowledge to students by words and by becoming role models for them. Actuated by this concept, shortly after Mr Wong Yiu-fai graduated from the Hong Kong University of Science and Technology, where he studied Physics, he joined the educational field as a teacher. He started teaching Physics to senior secondary classes at Cheung Sha Wan Catholic Secondary School 12 years ago. With tremendous enthusiasm in education, he has designed interesting learning activities to develop students´ interest in the subject. He leads them onto the path of lifelong learning. Over the years, he has nurtured many outstanding talents proficient in physics.

"I like talking with other people and sharing knowledge with them. Being a teacher is the most suitable professional pursuit for me." Teaching cannot be accomplished in one single move. When Mr Wong Yiu-fai first entered a classroom, he came across many difficulties. The most difficult one has been to arouse students´ interest in Physics. It is particularly true for senior classes because the subject content is much more difficult at that level. Besides establishing solid foundations, students have to pay greater attention during lessons in order to understand thoroughly what is being taught. This is the only way they can benefit from the lessons.

A simple experiment involving "enormous efforts"

"We cannot randomly stuff knowledge into students´ minds. If students are forced to memorize and recite something without thoroughly understanding it, the knowledge would only be held in short-term memory. Moreover, we can achieve better results with less effort when students have developed their interest in the subject. When the interest turns into motivation, it drives them to study and to take the initiative to acquire new knowledge." Mr Wong is willing to sacrifice much of his spare time, racking his brain to prepare interesting and practical experiments for his students. He wants to help the students understand certain phenomena more thoroughly and enable them to experience the charm and mysteries of Physics.

Once Mr Wong spent two days in his spare time to cover all the windows and the doors of the laboratory with wooden boards, blocking out all the light, in order to demonstrate to students an optical experiment. "The experiment lasted for three lessons. Afterwards, a student asked me why so much effort had been made for carrying out only a simple experiment. I replied that it was worthwhile if they realised that much effort had been made. Besides the findings of the experiment, I earnestly hope that students learn to do every task seriously. Being a teacher, I have the responsibility to prepare and teach each lesson very seriously. Students would be influenced by what they see in teachers and take the initiative to

study seriously."

Guiding students to raise questions and to think

To Mr Wong, who loves Physics ardently, the subject is interesting and creative. Students may not experience the same if they only sit in the classroom comfortably to flip through books or take notes. To stimulate students´ motivation to learn, Mr Wong has designed some learning activities for the Physics curriculum of senior classes. "For example, when the topic concerning soap is taught, I will take students to the corridors and ask them to blow soap bubbles. They would be guided to consider some questions in the practice and make observations. For example, why does the colour of soap bubbles change in a certain way? Why do they go up and down all the time? Why are they always round in shape? Students often raise questions enthusiastically and think carefully. They pay more attention and learn more seriously."

In "The Master", Han Yu said, "Regarding the Master, he passes on the truth, gives instruction and resolves doubts." In the eyes of Mr Wong, the duty of a teacher is not confined to inspiring students and passing on knowledge; the most important is to nurture people. Therefore, he tells his students stories about scientists during the lessons. On the one hand, he arouses students´ interest and introduces to them the subjects of study. On the other hand, he enables students to learn from real struggles or encouraging stories. He helps them establish proper values and philosophy in the course of finding out their own aspiration.

Being students´ teacher and friend

For Mr Wong, the greatest satisfaction of being a teacher comes from students, especially when he finds them getting more and more interested in the subject of Physics. He does not only consider teaching as a job; it is actually a responsibility which constantly urges him to work hard. He emphasizes that the most important duty of a teacher is to teach and nurture students. A teacher should make the best use of the teaching time in all circumstances. "Teaching is a process where life influences life. Perhaps a student is at one point naughty, or he would not choose to study Physics in future, but he would remember such a teacher who has endeavoured to teach him and to teach each lesson seriously."

The image of a teacher has changed, so Mr Wong would not put on a stern expression all day or appear arrogant. He has become his students´ teacher and friend. Students of Mr Wong are in senior levels, from Form Four to Form Seven. They are facing issues including public examinations and selecting the subjects to study in universities. Mr. Wong is willing to spend his spare time in talking with his students and listening to their concerns in relation to study. When there are problems concerning Physics, his students can send him the questions through online chat or by e-mail. He always answers them all. "When a student is willing to study problems of Physics at home, how could I, being the teacher, not give them some encouragement?"

Outstanding students respect their teacher

Mr Wong has been teaching for 12 years. Many of his students have chosen to study Physics at university and have outstanding achievements in their professions. "Being a teacher, I am most happy when I learn about my students´ achievements in their study. Sometimes when they were interviewed by the media, they would mention my name and extend their thanks to me. At that moment, I felt honored."

According to Mr Chu Fu-yau, the Principal of Cheung Sha Wan Catholic Secondary School, Mr Wong has made good use of diversified teaching methods. He has not only enhanced the students´ interest in learning, but has also succeeded in substantiating some abstract concepts of Physics, enabling students to understand them more easily. As a result, many of his students love Physics. Many of them who later studied Physics at university graduated with first-class honours. "Good teachers are the most valuable assets of the school. I share the concept of teaching of Mr Wong. Over the years, the school has given him support in relation to equipment and activity design so that students can enjoy better learning outcomes."

Teacher´s Sharing

To Mr Wong Yiu-fai, working in the field of education means taking responsibility for students, so he always makes thorough preparation for every lesson.

Physics should not be theoretical and alienated. Instead, it is full of life, growing with us and closely related to our lives. This is precisely the reason why I like instilling life into Physics, and infusing Physics into my students´ lives.

Take the lesson about "thin film" as an example. To enable experiential learning, students were made to experience blowing soap bubbles themselves in the playground. They were guided to appreciate the beauty of the bubbles: their formation, colours, changes in colour patterns and so on. They were then asked to record the whole process to describe the "life of a soap bubble" through comic strips and present their findings and observations through oral reports. Students were also inspired to think about questions such as "Why are the bubbles always spherical in shape?" and "Why do they sometimes rise and sometimes sink in the air?"

Through such activities, students were led to explore the beauty of Physics even in the very delicate and seemingly trivial phenomena in our daily lives. This is what Physics is all about.

Besides, I would make an analogy between the lives of soap bubbles and our lives: ´Life is short; that´s why we should live a brilliant life. In order to live a colorful life, we should seize the present opportunity and equip ourselves well.´

As for me, good preparation for every lesson is always the keystone of effective learning and teaching. Take the experiment concerning the diffraction of light as an example. The experiment itself only took about two hours. Yet, it took a few days to install planks to cover all the windows in the laboratory before the experiment. The planks prevented light from getting into the room effectively and ensured that the experiment could be carried out in total darkness. One student asked, "Why did you spend so much time and manpower on the preparatory process? My friend told me that his school had only shaded the light off with ordinary curtains." I asked him in reply, "So after finishing the experiment, how did you feel?" He answered, "I felt that you wanted us to do the experiment seriously." I then asked, "So did you?" He replied, "I did." I smiled and said, "That was the reason why I spent so much time and manpower on the preparation."

Being a teacher, I believe that teaching is a process of ´people influencing people´. It is quite a complicated question to answer how students´ interest in science is cultivated as it may take ages for one to develop a genuine interest in a particular domain. However, if we teachers insist on preparing every lesson seriously, I am confident that our students would notice and appreciate our work.

Recently, I have encountered a very special incident. A Form 1 student came to ask me, "Mr Wong, I know that you are a Physics teacher. Could I ask you a question? My I.S. teacher asked us to make a model which can demonstrate energy conversion. I have chosen to convert electric energy into light energy and mechanical energy. In my model, a small motor and a light emitting diode (LED) are connected to the battery in parallel. However, I can´t understand why when I used my fingers to stop the turning motor, the LED stopped lighting too!" I thought for a while and tried to explain to him in the simplest way. After listening to my explanation, he said "Thank you" and went away. His response told me that he was not satisfied with my answer. About one week later, while I was discussing the working principles of motors with my Form 6 students, I invited this Form 1 boy to come to my class and asked the Form 6 students to answer his question. My act was to test the progress of my Form 6 students about the subject. Moreover, I

believed the F.6 students could give a more comprehensible answer to the Form 1 boy.

Questioning is essential in students´ learning process. Students should be given the chance to ask frequently. Through their process of asking, my clarification on their distorted or blurred concepts is made possible and effective. It is of the greatest significance that I myself can benefit from their questions as they serve as opportunities for me to reflect on my teaching methods and presentations constantly, enabling an on–going process of modification and evaluation in the teaching and learning process. However, students in Hong Kong seldom ask sensible questions. The greatest significance of my act is to make the Form 1 boy know that teachers will deal with his every question seriously. Students are always encouraged to ask questions.

Cultivating students with positive values is always my priority which outweighs the teaching of subject content. The current Physics curriculum includes a number of famous scientists and their contributions. I find the stories of those scientists very inspiring. For example, telling the story and relationship of J. J. Thomson and Rutherford would make students understand the old Chinese sayings, ´It´s not who starts learning first that matters, but who attains the goal´ and ´Pupils can surpass their masters´. I would also like to add the anecdotes of some distinguished scientists, like Isaac Newton and YAU Shing–tung as the content of my lessons. Their successful stories remind my students that working diligently and persistently is of equal importance to endowments. Students should strengthen themselves and strive for the ultimate success.

Moreover, when teaching the subject of nuclear fission, I would spend a lot of time on the ´Manhattan Project´ which was carried out in the US during the Second World War. Emphasis is placed on the race between Germany and the US to build the first nuclear bomb, and the damage caused by the nuclear bomb to mankind. As one Chinese idiom goes, ´water can make a boat float but it can also make it sink´. To me, letting my students realize the significance of making good use of scientific achievements is definitely far more important than mastering the Physical concepts of the nuclear fission process.

In order to enhance students´ interest in class, I have been working hard to improve the existing experimental designs and introduce more interesting demonstrations. For example, we have bought a metal sphere with a diameter of 50 cm for the ´flame–probe experiment´ to facilitate students´ observation. To let students observe what streamlines are, dry ice was put into the water and the released CO_2 gas was diverted to a long transparent tube. Students could then see the streamlines clearly at the other end of the tube. I also like to put an air–filled balloon near the vent of the air–conditioner in the classroom so that the balloon could float in the draught in front of the air–conditioner. At the moment when students were fascinated by the scene, I felt it was a good time for me to introduce "Bernoulli´s Principle" to them.

After teaching Physics for more than ten years, I deeply realize my limitation while appreciating the profoundness of science. Science and technology are ever changing. There are new scientific advancements nearly every day. I tell my students that I am not a scholar in Physics because I do not have any contributions in the subject area. However, I ardently love physics because it is magnificent and refined.

◄ Mr Chu Fu-yau, Principal of Cheung Sha Wan Catholic Secondary School, says that Mr Wong has made good use of diversified teaching methods to enhance students' interest in learning.

What I want to do in my teaching practice is to unfold the magnificence of Physics to my students.

In fact, we teachers can only make limited contributions to students´ learning process. The attitudes and motivation of students play the most crucial role. Therefore, instead of emphasizing the subject content, I would rather concentrate on inspiring students´ interest in learning the subject. It is my hope to put my students in the midst of the magnificence of physics through experiments, demonstrations and the stories of scientists. I believe that once students are inspired, they would take the initiative to appreciate the laws of nature and pay attention to the incidents and objects around them. With the mastery of some learning skills, the seeds of success would finally sprout and my students would attain achievements in their studies.

Way of Access to the Information of the above Teaching Practice

Please contact Mr WONG Yiu-fai for further information.

Preferred Way of Dissemination

Seminar

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▲ **Mr Wong Yiu-fai joined the education profession shortly after he had graduated from the university. He teaches whole-heartedly and has nurtured numerous outstanding persons in the past 12 years.**

Summary of Assessment

Outstanding multi–facet inspiration on students to pursuit lifelong learning in Physics

Mr Wong has a very strong passion for Physics, and his multi-facet inspiration paves the way for his students to conduct lifelong learning in Physics. His teaching focuses on developing students´ interest and aspiration in Physics. Mr Wong designs learning activities that are related to the daily lives of students to promote experiential learning. For instance, in one lesson, students were given the chances to experience blowing soap bubbles. He guided students to appreciate the beauty of the bubbles: their formation, colours, changes in colour pattern, etc. He asked them to record the whole process to describe the "life of a soap bubble" through comic strips and present their findings and observations through oral reporting. Students were also inspired to think about questions like "Why should the bubbles be always in spherical shapes?" and "Why do they sometimes rise but sometimes sink in the air?". Through such activities, students were led to explore the beauty of Physics even in seemingly trivial phenomena in daily lives.

Mr Wong could make good use of stories of famous scientists, for example, J. J. Thomson, Isaac Newton, YAU Shing-tung and so on, to link up the subject content in each topic in Physics in order to arouse students´ interest and motivation in learning Physics. He is reflective and has innovative ideas in refining experimental designs and home-made equipment in order to provide every student with hands-on experience in performing experiments. He could effectively help students to understand abstract concepts with concrete examples and simple analogies. In the lesson observed, Mr Wong refined the experimental design of a dice analogue for radioactive decay by increasing the number of dice to one thousand to manifest the process of decay. During class discussions, Mr Wong could also effectively engage students intellectually through thought-provoking questions on scientific ideas to develop students´ high order thinking skills.