

Theory and Application of Learning Cycles and Learning Styles in Education of Traditional Chinese Medicine

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Abstract

Traditional Chinese Medicine (TCM) is a relatively new subject in higher education in the UK and Europe, but this area has been growing since the first BSc (Hons) degree started at Middlesex University in 1997.

From the very beginning, TCM education was modelled on the curricular system that was used in Chinese TCM medicine schools, such as the one used at Middlesex. There are many difficulties in implementing the Chinese TCM curricular system in the UK and Europe. One of the most striking difficulties is the lack of clinical practice placements and the lack of clinical cases of sufficient quantity and variety. Overcoming this problem is essential in achieving the aim of TCM education – to produce competent, safe and caring TCM practitioners.

In the last year, a study was carried out to find a way of enhancing students' clinical experience by using the learning cycle concepts in TCM clinical case studies. In this article, the results of the study are reported, and the applications of the learning cycle concept in TCM education are discussed.

The research design is centred on compiled TCM clinical cases. The method can be summed up as "Case Study Cycles". The students who took part in this study were the final year TCM students at Middlesex University.

Two Case Study Cycles were used, Cycle A and Cycle B.

At the end of the academic year, when the students have completed the study of 10 cases they were given both Figure A which represent Cycle A and Figure B which represent Cycle B, and asked to answer 14 questions.

All answers from individual students are collated and analysed.

The results demonstrate that students understand both learning cycles, but they prefer Cycle B. They have found Cycle B suits their learning styles. The role plays, being either the patient or the doctor, help them significantly in their clinical learning. We have found that with the electronic age upon us, we can use the internet, email and specific teaching tools within a university's electronic network, to enhance the learning experience of students, in this case, final year Chinese medicine students.

学习循环方法论在英国中医教育中的实践

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论文摘要

中医学在英国和欧洲是一门相对新兴的学科。自从 1997 年米杜塞斯大学开始教授中医本科课程以来，中医教育在英国和欧洲已由长足发展。

从一开始，米杜塞斯大学的中医教育就以中国国内的中医教程为模式。然而，由于不同的国情，在英国和欧洲实行中国式的中医教育，尤其是按国内的中医教程施教，困难不少。最大的困难之一，就是缺乏临床实习基地和缺乏高质量多样化的病案。解决此问题对于在英国和欧洲培养能有能力的，安全的和负责任的中医师是至关重要的。

在过去的学年里，我们做了一项研究，以寻找一种比较有效的方法来加强学生的临床经验。我们所用的方法，是利用学习循环方法论的概念，让学生学习临床病案。

本文将报告此研究的初步结果，并讨论学习循环方法论在中医教学中的应用。

本研究项目所针对的是中医临床病案。所用的方法可以简称为“临床病案循环学习法”。研究是在米杜塞斯大学中医专业四年制的毕业班进行的。我们比较了两种学习循环方法，A 和 B。

在学年结束时，学生们已着重学习了 10 个病案。此时我们给学生两个循环图。图 A 代表临床病案循环 A，图 B 代表临床病案循环 B。学生被要求回答 14 个问题。所有学生的答案都收集起来，并作分析。

结果表明，两个临床病案循环学生们都理解，但他们都认为临床病案循环 B 比临床病案循环 A 好。他们认为临床病案循环 B 比较适合他们不同的学习风格。在学习过程扮演病人或医生的角色能对他们临床病案的学习有重大的帮助。我们发现，在电子时代，我们可以利用互联网，电子邮件和大学电子网络所提供的教学工具，来加强学生的学习。在本文中，就是加强中医专业毕业班的临床实践。

Introduction

Traditional Chinese Medicine (TCM) is a relatively new subject in higher education in the UK and Europe, but this area has been growing since the first BSc (Hons) degree started at Middlesex University in 1997.

From the very beginning, TCM education was modelled on the curricular system that was used in Chinese TCM medicine schools, such as the one used at Middlesex. There are many difficulties in implementing the Chinese TCM curricular system in the UK and Europe. One of the most striking difficulties is the lack of clinical practice placements and the lack of clinical cases of sufficient quantity and variety. Overcoming this problem is essential in achieving the aim of TCM education – to produce competent, safe and caring TCM practitioners.

In the last year, a study was carried out to find a way of enhancing students' clinical experience by using the learning cycle concepts in TCM clinical case studies. In this article, the results of the study are reported, and the applications of the learning cycle concept in TCM education are discussed.

Methods

The research design is centred on compiled TCM clinical cases. The method can be summed up as “Case Study Cycles”. The students who took part in this study were the final year TCM students at Middlesex University.

Two Case Study Cycles were used, Cycle A and Cycle B. In a teaching session of 2 hours, the 1st hour is used for lecturing and the 2nd hour used for a case study.

Cycle A is the one used in the curricular system of Chinese TCM medicine schools and in the teaching of Middlesex TCM students. This cycle (Figure A) has 5 parts. The students are given a lecture on a TCM condition before they are given a case on that condition to study after the class. The student will then come back to the class a week later, and they are given feedback after a short session of questions and answers. The learning cycle will then completed here.

Cycle B is a new design. It was used in studying cases for the students. This cycle (Figure B) has 9 parts. In a class of students, they are divided into groups of 4. For example, in a class of 20 students, there will be 5 groups.

They take turn to be a “patient”, and every session there will be 5 “patients” (one in each group). The “patients” are given a case 1 week earlier by email, but they must not let other know about it. They must study it carefully before the teaching session and be prepared to be seen by members of their groups, who are the “consultants”.

After an hour's lecture on a particular condition, students will start the consultation process. They will have to make diagnosis and treatment plan etc. One of the “Consultants” will report to the class from each group. They will compare each other's diagnosis and treatment plans. The lecturer will summed it up and give answers on the case. A discussion is held on the case – taking and giving feedback from students.

The case's actual course of treatment is put on OasisPlus (an interactive blackboard learning medium) for all students. They can then have discussions on OasisPlus. In the next lecture, students can also give feedbacks.

All students have been through case studies by using Cycle A in their courses of Middlesex TCM education. They were all taught in the same class in their final year, using Cycle B for case studies.

At the end of 12 weeks teaching, students have completed the study of 10 cases using Cycle B. Via emails, they were given both Figure A and Figure B, and asked to answer the questions:

1. Which learning cycle do you prefer?
2. Learning Cycle A suits my learning style better than Learning Cycle B (Yes/No). Please state why.
3. Learning Cycle B suits my learning style better than Learning Cycle A (Yes/No). Please state why.
4. Being the "Doctor" has helped me learn better than being the "Patient" (Yes/No).
5. Being the "Patient" has helped me learn better than being the "Doctor" (Yes/No). Please state why.
6. Being the "Doctor" and "the Patient" has helped me learn better than just being the "Doctor" or just being the "patient" (Yes/No). Please state why.
7. After experiencing both Learning Cycle A and Learning Cycle B, I have found that Learning Cycle B have helped me make correct TCM diagnosis and treatment plans better and easier (Yes/No). Please state why.
8. Learning Cycle B is too complicate for me to understand (Yes/No)
9. There are 4 main learning styles. Please read the characteristics of the learning styles below and decide which one is the closest to you **in your learning in case studies. Please choose one "yes" only from questions 10 – 13.**

Accommodator: Can carry out plans; interested in action and results; adapts to immediate circumstances; trial and error style; sets objectives, sets schedules. Learn better when allowed to gain "hand on" experience

Assimilator: Ability to create theoretical models; compares alternatives; defines problems; establishes criteria; formulates hypothesis. Learn better when presented with sound logical theories to consider

Converger: Good at practice applications; makes decisions; focuses efforts; does well when there is one answer; evaluates plans; selects from alternatives. Learn better when provided with practical applications of concepts and theories

Diverger: Imaginative; good at generating ideas; can view situation from different angles; open to experience; recognises problems, investigates, senses opportunities. Learn better when allowed to observe and gather a wide range of information

10. In learning style, I am an “Accommodator” (Yes/No)

11. In learning style, I am an “Assimilator” (Yes/No)

12. In learning style, I am a “Diverger” (Yes/No)

13. In learning style, I am a “Converger” (Yes/No)

14. Please add comments below if you wish

All answers from individual students are collated.

Figure A

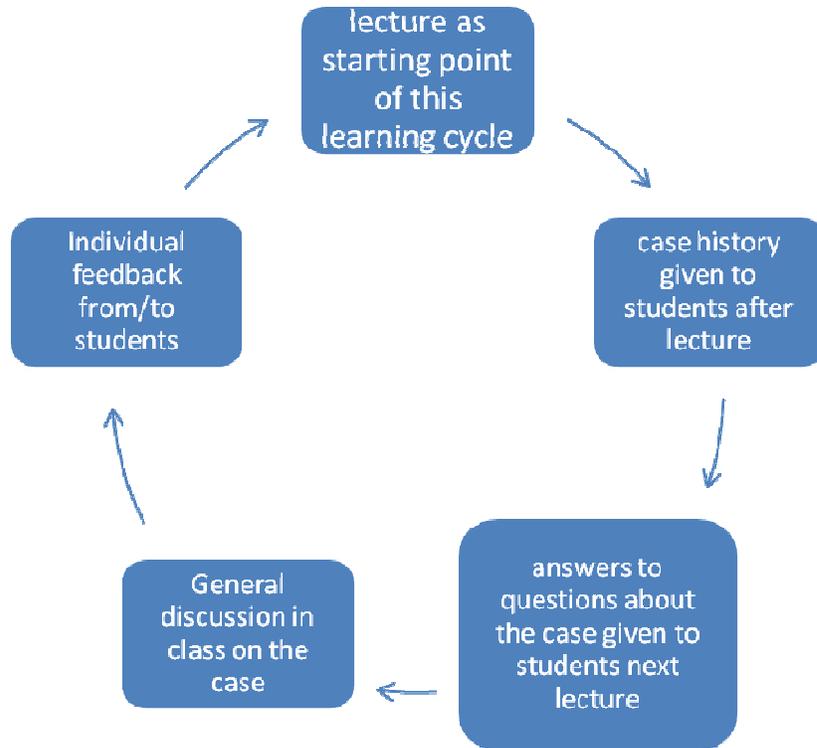
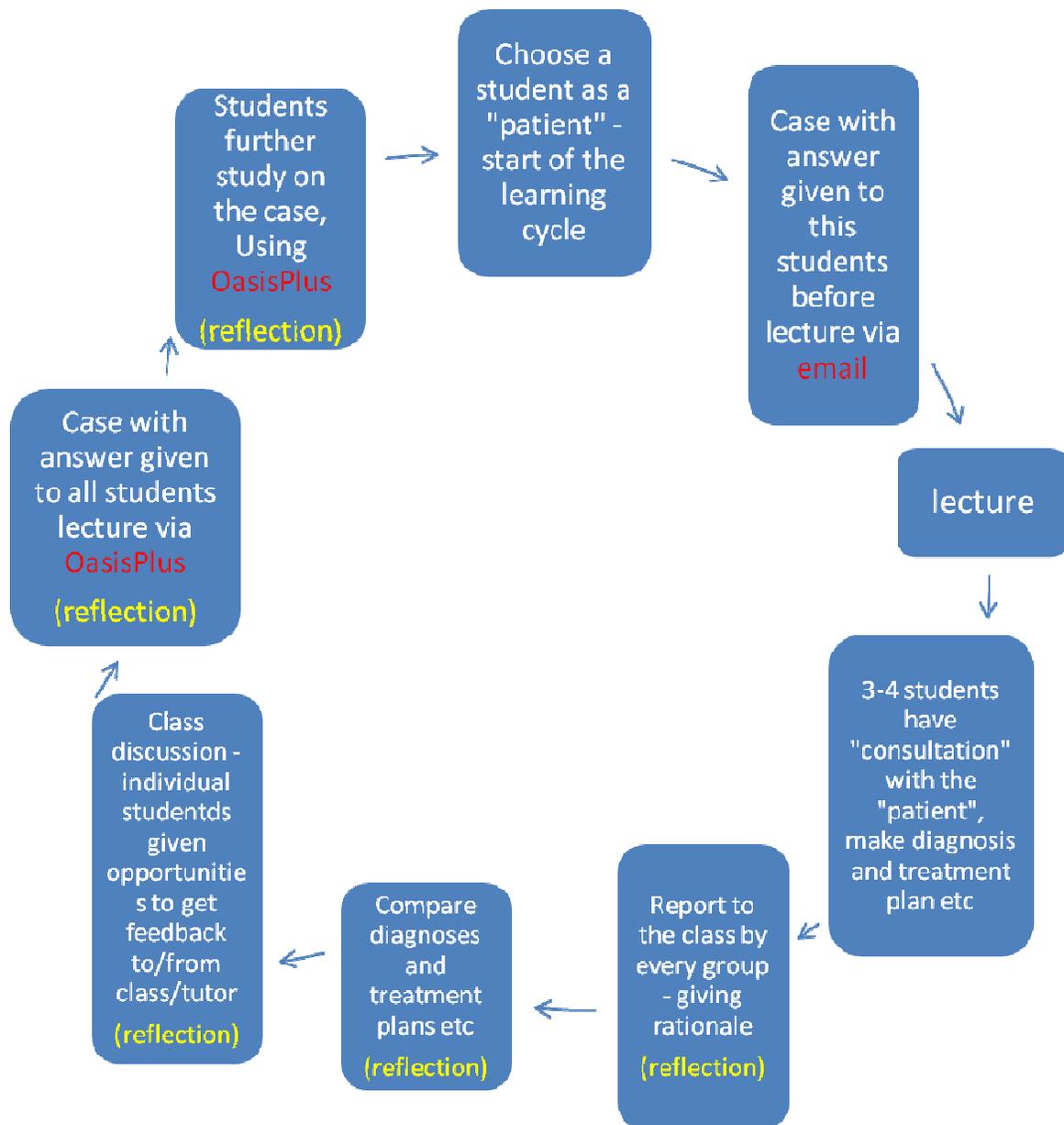


Figure B



Results

From a class of 19 students, 11 students responded to the questions. The following demonstrated the collated answers to the questions.

Table 1. Summary of Students' Answers to the Questions

Question	Students' Answers	Note
1. Which learning cycle do you prefer?	All 11 prefer Learning Cycle B	
2. Learning Cycle A suits my learning style better than Learning Cycle B	1 Yes 11 No	1 student's answer is both Cycle A and Cycle B are preferred.
3. Cycle B suits my learning style better than Learning Cycle A	11 Yes	
4. Being the "Doctor" has helped me learn better than being the "Patient"	10 Yes 1 No	The No answer student does not give any reason
5. Being the "Patient" has helped me learn better than being the "Doctor"	9 Yes 2 No	
6. Being the "Doctor" and "the Patient" has helped me learn better than just being the "Doctor" or just being the "patient"	11 Yes	
7. After experiencing both Learning Cycle A and Learning Cycle B, I have found that Learning Cycle B have helped me make correct TCM diagnosis and treatment plans better and easier	11 Yes	
8. Learning Cycle B is too complicate for me to understand	11 No	
9.-13. Learning Style	5 Accommodators 5 Assimilators 8 Divergers 8 Converggers	8 students chose more than one style, 2 student chose one style only, and 1 student did not choose any style

Discussions

Learning is a process as well as an outcome (Zuber-Skerritt 1992). In Traditional Chinese Medicine (TCM), the process of learning is traditionally of the learning by an apprentice and the outcome is to becoming a master. For the apprentice to learn, TCM cases are recorded in ancient times as well as modern times in books compiled by practitioners. For example, in Qing Dynasty, Ye compiled “Lin Zheng Zhi Nan Yi An” (*Cases for Clinical Guidance*), which includes more than 90 cases in all branches of TCM in more than 10 chapters (Ye, 1746). In recent times, Chen (1993) compiled “Traditional Chinese Medicine Clinical Case Studies”, which has 140 cases covering all systems in TCM. Students learn these cases mostly in the classroom or at home.

The traditional process is very much similar to that described in Cycle A in this paper. Many TCM teaching institutions, both in and outside China, follow this cycle when coming to teach clinical TCM. The students are given a lecture on a TCM condition by the lecturer. A case is then given to them, mostly in a printed handout or in electronic form, on the condition which had been lectured. The student will then take it home to study. They will come back to the tutor later, either in a class or in the clinic, to be given feedback after a short session of discussion. The learning cycle will then completed here.

Although the process can gives individual students the chance to carry out some in depth work such as analysing the conditions, looking up each formula, and finding an answer on their own with no time restriction, and preparing themselves with questions to the following lesson, the weakness of this process is that students do not engage well with the conditions and they are not stimulated. They have found that it is a very theoretical, one-dimensional learning process and is sometimes quite boring. It lacks interaction and students do not get as involved as they would like to be. They want an interactive, more efficient and more realistic and hands-on approach to learn; and feel that they can use their knowledge and their immediate initiatives in dealing with cases.

In an ideal world, what the students want would be normally available in a Chinese medicine hospital or clinic, where students can practise daily on real patient. The reality is that this is not always possible. Furthermore, students need to be better prepared before they can practise on real patients. Therefore, there is a need to design a teaching model which is as realistic as it can be to the real clinical situation. In the meantime, students must be given opportunities to reflect on the experience to enhance their learning.

Cycle B is the enhanced learning cycle designed to improve student learning clinical cases in TCM. The cycle combines the traditional learning cycle theory which was referred to as sensing/feeling, watching/reflecting, thinking, and doing (Fielding 1994) and restructured as concrete experience, reflective observation, abstract conceptualization and active experimentation (Kolb 1984).

There are a number of special characteristics in Cycle B. Cycle B is an extension of the learning cycle theory. The students can enter this cycle at any point, and they can follow the sequences of the cycle in their learning. It provides them with feedback on the cases they study, which help them to evaluate what and how much and how well they have learnt from the cases. Having gone through this cycles many times (at least 12 cases in a semester), students can form a practical concept of clinical cases and be experienced with virtual clinical situations. This process, which was described as process of *plan, act, observe and reflect*" by Zuber-Skerritt (1992b) and as *wanting, doing, feedback and digesting* Healey (1998), could be applicable in the learning and teaching TCM.

Cycle B incorporates the original idea of learning cycles and the use of modern technology. The use of emails to give students (the pretended "patients") before the lecture sessions and the use of Blackboard Learning System (named OasisPlus" at Middlesex University) after the lecture give the students opportunities to enhance their reflection on the cases. The application of technology in supporting the learning cycles approach is a relatively new concept. It has been described in the learning and teaching of science (Turkmen 2006), but this is probably one of the first reports that the application of modern technology to the learning cycle approach in learning and teaching of TCM.

Given the definition of learning styles by Kolb (1984), students can indentify themselves with these learning styles. It is interesting, however, that most of the students in this study suggest that they may belong to more than one learning styles, as demonstrated in Table 1. Therefore, it is probably right to say that TCM students are not confined to one learning style. They tend to use more than one learning style in their TCM studies.

Gibbs (1999) summarised problem-based learning as "if the aim is to become a doctor, then the best way of doing so is being a doctor – under appropriate guidance and safeguards". From the results of this study, it is clear that the students enjoy "being the doctor" as well as "being the patient". It certainly helps to understand the patient's perspective as well as the doctor's perspective. It is also allows individual students to compare his/her approach to a patient's problem and his/her peer approaches. Therefore, in problem-based learning and in particular in clinical case studies, it would be possible to say that if the aim is to become a doctor, then the best way of doing so is by being a patient as well as being a doctor. This approach can be applied in TCM studies. It can also applied to medical studies and areas allied to medicine.

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Appendix 1. Collated Students' Answers

1. Which learning cycle do you prefer?

All 11 students' answer is they prefer Learning Cycle B

2. Learning Cycle A suits my learning style better than Learning Cycle B (Yes/No). Please state why.

Student 1: No, Cycle B preferred

Student 2: Yes, because it gives me the chance to look up each formula and analysis them and find an answer on my own with no time restriction, i.e. more depth of work. I feel I could bring more questions to the following lesson.

Student 3: No, Cycle B preferred

Student 4: No, there is more interaction from Cycle B.

Student 5: No cycle B suits better, because it's more involved and interactive

Student 6: Cycle B is a more efficient way of learning and more realistic. Rather than studying the case at home and looking up notes and texts etc., this is not realistic; with Cycle B we have to think on our feet and use immediate initiative as we would do in a real situation.

Student 7: No. One-dimensional learning is sometimes quite boring

Student 8: No. I prefer B (see answer to Question 3)

Student 9: No, Cycle B is more involved, the student can spend more time thinking about the case.

Student 10: No. I feel the hands on approach of cycle B more engaging and stimulating.

Student 11: No – because cycle A is very “theoretical”, and I find ‘reading and discussion’ studying takes more time to make it memorable without practical application or exercises simulating that.

3. Learning Cycle B suits my learning style better than Learning Cycle A (Yes/No). Please state why.

Student 1: Yes, learning through more interaction involved.

Student 2: Yes because it’s interactive, challenges me without looking at my books and can learn from peers.

Student 3: Yes, more interaction and the possibility to prepare for the lecture is crucial to assimilate in a better way the body of knowledge given.

Student 4: Yes, I enjoyed the role play and group discussion in cycle B.

Student 5: Several reasons for choosing cycle B. It requires more deliberation and analysis of symptoms and complaints in order to achieve an accurate diagnosis and prescribe according to existing pattern, real life experience.

Student 6: Yes, reasons as in my answer to Question 2. A more realistic setting requiring immediate analysis and response and without the use of texts etc. Prepares us for real clinical practice and allows us to probe the patient there and then, again as we would do in the real situation. Also allows us to learn by experience and learn from mistakes.

Student 7: Yes. Role play is more interesting. Interaction with classmates can be one of the learning processes too.

Student 8: Yes. I prefer B. it is more interactive. It is good to read before the class on our subject, have the lecture and then do the practical exercise in the same lecture

Student 9: Yes, there is much more class interaction and investigation in small groups. Makes the students think about the problem.

Student 10: Yes. I find the style of B allows me to learn more and put what I have learnt into practice.

Student 11: Yes, with cycle B there is time to understand the case more. Role-play is better than just reading – enables me to think “what questions should I ask the patient?” “what observations should I make?”, I can learn from other students. Then feedback from the tutor ensures correct practice. This style of learning makes me feel more confident in practice.

4. Being the “Doctor” has helped me learn better than being the “Patient” (Yes/No).

Student 1: Yes, because through this way, I’ll really put myself out in the situation of the case to think how I should reach a diagnosis and how to treat.

Student 2: Yes, more true to life as we won’t have so long in practice to diagnose and treat.

Student 3: No

Student 4: Yes, because I will need to put theory into practice to make a diagnosis, and think of a treatment plan to the proposed scenario. The group discussions had also allowed me to learn from my classmates in terms of diagnostic skills and treatment strategy.

Student 5: In both cases there is a degree of involvement, but being a 'doctor' tests the knowledge in real terms and helps to identify knowledge gaps

Student 6: Yes. As my answers to Question 2 and 3, the ability to conduct a true consultation and probe any answers as in a true setting.

Student 7: Yes. Need brain storm and find out your strengths and weaknesses in which part of TCM.

Student 8: Being both the patient and the doctor are very useful. Both have helped me equally

Student 9: Yes, because being the doctor enabled me to really concentrate on asking diagnosis questions and thinking of a treatment plan and herbal prescriptions.

Student 10: Yes, as the doctor is obviously what we all hope to be it is more fun and easier to learn as the doctor.

Student 11: Yes, because I can focus on consultation and treatment plan

5. Being the "Patient" has helped me learn better than being the "Doctor" (Yes/No). Please state why.

Student 1: Yes, in a way, as I can see how others would consider the case

Student 2: Yes, it's interesting to be objective to other people's processes of diagnosis and prescription formulating.

Student 3: I benefited more from being the patient since it gave me the opportunity to study the case before lecture, try to memorise formulas and single herbs that might suit the case and then, in class to try and orientate dr. classmates according to their findings.

Student 4: Yes, because I will need to put theory into practice to make a diagnosis, and think of a treatment plan to the proposed scenario. The group discussions had also allowed me to learn from my classmates in terms of diagnostic skills and treatment strategy.

Student 5: It certainly helps to understand the patient's perspective and allows thinking how other students approach a problem

Student 6: No. Being a patient requires the brief understanding of a case and then the reading of script. Though it still does give a good understanding of the complexity of any given case and the necessity to consider western tests and diseases, there is less learning experience for the 'patient' than there is for the 'doctors'.

Student 7: Yes. Study the case beforehand and being a patient can understand more about how patients react in consultation.

Student 8: see answer to Question 4

Student 9: Yes, because I can see what it is like being a patient and going for a TCM consultation. It has made me realise that often the patient doesn't give the full picture of their symptoms.

Student 10: Yes, although this is the same as the last question, being the doctor allows us to learn an overview of all the syndromes specifically the herbs we give. Whereas being the patient allows us to get to grips with the individual syndromes and thus teaches us more about the diagnosis in a very narrow respect.

Student 11: No, but I don't mind being the patient sometimes, I think it's valuable and should stay. I can learn that unless the right questions are asked, patients may not give the 'whole clinical picture'. Also what it can feel like to have questions asked, etc. In honesty, in class, it's fun in a way but with a serious purpose, trying to role play someone very different to myself (age, gender, body type, habits, etc). I think it's really very valuable.

6. Being the "Doctor" and "the Patient" has helped me learn better than just being the "Doctor" or just being the "patient" (Yes/No). Please state why.

Student 1: Yes, certainly best way of learning through the eyes of a doctor and through the eyes of a patient from different angles.

Student 2: Yes, good to observe how others would conduct a consultation and questions how I could improve, less egotistic.

Student 3: Yes, I think that when being a doctor one solely relies on his acquired skills, therefore it is an excellent realistic way of assessing one's strengths and weakness and therefore being able to work accordingly.

Student 4: Yes, so I can learn from both angles.

Student 5: Because it helps to assimilate and analyse knowledge already gained and to identify which areas need to be worked on, more integrative and involving process of learning.

Student 6: Yes, essential to understand what the patient goes through in the situation and good experience to see other people's techniques (as doctors).

Student 7: Yes, I can see things in different point of views.

Student 8: Yes. I get an understanding from both sides, and I train my mind differently.

Student 9: Yes, because it is always good to see the situation from both perspectives.

Student 10: As stated in the last question varying between the doctor and patient is a very good approach as it allows us to experience different sides of it and teaches us different parts of the procedure.

Student 11: Yes, because of the reasons above, it's a good exercise to try to be a patient, you can know what information the doctors didn't find out; know how it feels to be asked sensitive questions. When being a doctor, I find the role play really helps my real-life practice.

7. After experiencing both Learning Cycle A and Learning Cycle B, I have found that Learning Cycle B have helped me make correct TCM diagnosis and treatment plans better and easier (Yes/No). Please state why.

Student 1: Yes, and it not only help me make correct TCM diagnosis and treatment plans better and easier, but also put me in a real life situation where I have to make a decision in front of a patient within a certain time.

Student 2: Yes, peer support is always better and easier to make correct diagnosis and treatment plans. I don't think it should be the only method. I wonder that if I spend time on my own doing them sometimes, I would have a deeper level of understanding.

Student 3: Yes. The fact that there was several drs. For one patient really helped finding the best treatment and often better solutions than if alone and this experience is giving us confidence and experience in diagnosing, and prescribing in a relaxed environment.

Student 4: Yes, I found cycle B more practical and "hands-on" compare to cycle A.

Student 5: Cycle B because you work against time, real life situation similar to clinical setting

Student 6: Yes, the realism of a true setting: having to use initiative in asking questions but also able to further probe the responses. As a patient, considering western aspects of medicine and experiencing other colleague's different styles of consultation.

Student 7: Yes. Making decision in an informal and relaxing atmosphere is easier. Discussion in a small group can also help.

Student 8: Yes. I understand the theory better, and I practice, both as a patient and a doctor, together with my colleagues. Talking about it with the other students, after the lecture, and trying to make a diagnosis, is very helpful.

Student 9: Yes, it makes you think on the spot with the patient in your presence so there is a little added pressure but it helps to discuss it in the small group.

Student 10: Yes. It is a good introduction to what we have to do in a clinical environment in a controlled and safe environment where mistakes are ok.

Student 11: Yes, because learning cycle B is closer to clinical practice more – in real-life, you can't stop and read your textbooks, you must think clearly there and then with the patient. I can do cycle a style when I do my written case studies, I think using cycle B in class complements it well and makes me better.

8. Learning Cycle B is too complicate for me to understand (Yes/No)

All students answer is that Learning Cycle B is not too complicate to understand.

9. There are 4 main learning styles. Please read the characteristics of the learning styles below and decide which one is the closest to you **in your learning in case studies**.
Please choose one "yes" only from questions 10 – 13.

10. In learning style, I am an "Accommodator" (Yes/No)

11. In learning style, I am an "Assimilator" (Yes/No)

12. In learning style, I am a "Diverger" (Yes/No)

13. In learning style, I am a “Converger” (Yes/No)

Student 1: Yes, my learning style seems to resemble ‘Accommodator’ most but I also have style of ‘Assimilator’, ‘Diverger’ and ‘Converger’.

Student 2: In learning style, I am a “Diverger”

Student 3: Hard to say...I think I would be a bit of all of them, as everybody I guess, but for the sake of an answer I would say Diverger-Assimilator mainly.

Student 4: I am mostly an Assimilator, but also have style of a Converger.

Student 5: Yes, I am mostly “Diverger”, but a few traits of other styles present

Student 6: Yes I am a “Converger” but also “Diverger”

Student 7: I am a mixture of “Accommodator”, “Diverger” and “Converger”

Student 8: No answer

Student 9: I am a “Converger” but also “Diverger”

Student 10: In learning style, I am an “Assimilator”

Student 11: Yes in learning style, I am an “Accommodator”, but also recognise some elements of “Converger” and “Diverger” in the way I learn. Chose “Accommodator” because I learn most comfortable hands-on. To be comfortable and learn fast, I like it when theory is clearly explained to underpin why I should be doing what I’m doing. Learning by just memorising things without knowing why they are important takes more time for me, my brain seems to remember faster when it has a ‘because’ after a fact!

14. Please add comments below if you wish:

Student 3: The way we have been studying internal medicine so far has really been a great learning opportunity and probably one the richest for me so far.

Student 5: In my opinion, cycle B is the optimal one for learning as it allows to consider a problem from different angles (e.g. being a ‘doctor’ or a ‘patient’), as well as it allows to see how other students think and approach a problem.

Student 6: It’s the most efficient and productive way of learning for this type of course.

Student 7: Would like to have different students in a group every time so as to have a broader view.