

Development of critical thinking abilities in Traditional Chinese Medicine through online case-based learning at Blackboard

Feng Tu, Chun Hoi Cheung, Hong Qi Zhang School of Chinese Medicine, Hong Kong Baptist University

King Chong Centre for Holistic Teaching and Learning, HKBU

Objectives



- Apply modern technology and pedagogy for teaching traditional medicine
- Outcomes-based Teaching and Learning (OBTL): by case-based learning, students may discuss/debate on alternative courses of action, nurturing them to become effective decision-maker and TCM professional pratitioner.
- Using e-Learning instruments (Blackboard) to foster and enhance the critical thinking abilities for TCM

We are not only knowledge-transferring, but passing on a profession

吾生有杏:院長醫生周記(十六)醫學教育出了問題?! 中文大學醫學院院長陳家亮親筆分享杏林大小事【明報專訊】2015.6.8

上月,我應邀到美國參加一個全美醫學教育論壇。席上一位哈佛教授播放了一輯短片,內 容是有關哈佛醫學院的一位畢業生向病人問診期間出現的問題。這學生從不與病人有眼神 接觸,<u>滿口都是病人聽不懂的醫學名詞,把求診者視為「病症」而不是「病人」。參與論</u> <u>壇的教育家無不咋舌,席上不少院長及教授均承認這問題在美國其實相當普遍。</u>

- ▶ 哈佛醫科生 看診無眼神接觸
 - 或許大家覺得上述情景似曾相識,香港的醫生也經常受到同樣的批評。很多人以為這種 劣質的醫科生不可能出於世界上最頂尖的學府,事實上一所學府的名氣跟其教學質素並 沒有任何關係。在論壇上,美國各大醫學院激烈地辯論收生的方法是否出現漏洞。有些 教育家建議修改收生方法,把不適合讀醫的學生區別出來。有些醫學院加添了不少測試 來評估學生的素質、道德及倫理水平。也有些學府採用了商業機構的「360度全方位」 評審,更有些學校嘗試用「訓練營」來挑選「至fit男女」讀醫。.....

出事少實踐 難養成責任感

第二、醫學生需要更多接觸病人的實踐機會。理論終歸是理論,每個病人都是獨一 無二。對病人有承擔才能夠體會他們的痛苦和明白他們的需要,而這分承擔感是需 要從實踐中學習。當我還是學生的年代,一個醫科生已經要負責多個病人,從收症 至急救都是親力親為,早已養成對病人的一分責任感。現今的醫療卻則重風險管理, 實習生沒有機會肩負責任,就連用針筒抽取血液樣本的簡單工作也外判給了化驗員。 沒有了責任感,學生只會把病人視作活動教材,他們往往只知道從病人身上索取自 己的需要,又如何明白病人的痛苦?那「哈佛高材生」的短片正正反映了這現象。

生命倫理教育香港落後

第三、生命倫理的培訓必須與時並進。醫學發展一日千里,現今科技已能夠把很多 科幻故事變成事實,例如讓我們選擇嬰兒的性別、智商、高矮等。此外,還有器官 移植、安樂死等極具爭議的問題,都需要嶄新及有系统的培訓,以面對這些價值觀 及道德的挑戰。香港醫療水準雖是國際首屈一指,但生命倫理的教育及法律卻比不 上其他先進國家如新加坡。 我們若要栽培優秀兼仁心仁術的醫生,重點不單是如何選擇合適的學生讀醫,更重 要的是如何在課程及醫療體系上作出配合,才不會埋沒了一班有心貢獻社會的醫學 生。

作者簡介:中文大學醫學院院長陳家亮 親筆分享杏林大小事

Approach

- A database of medical cases in TCM Orthopaedics accumuldated over the past decade stored at Blackboard.
- Assign the students to study and discuss at its Discussion Board where students can conduct individual and group learning, and being supervised timely by the teachers from time to time.
- Students make a group presentation, assessed by teachers according to the university-level Critical Thinking Rubric benchmarked with the Association of American Colleges and Universities (AAC&U)



Step 1: Database

- Classical TCM orthopedics medical cases put in Blackboard
- A typical case-study:
 - A Patient fractured after attending a TCM Clinic for leg pain
 - the TCM practitioner charged for the sole responsibility, and a supporting document was given by a WM doctor/professor
- Lawsuit: arguments from all sides:
 - Defendant: TCM practitioner
 - Plaintiff: Patient
 - Medical expert's report
 - Lawyers of 2 sides

DCPI 2074/	· · · · · · · · · · · · · · · · · · ·	1			
		CPI 2024/2007			
1	BI THE DISTRICT COUNT OF THE				
HON	IN THE DISTRICT COURT OF THE				
	Professor Professor Emerifus, Onthopsedics & Traumatology F Director, Jackey Clab – e a 1 k for Onteoporosis Can You Ref: LA/MMN 7531200	ax: (852) 2632-5441 . 1 & control emailZ pingdrung@cukk edu.bk	sM 7 rok sM 8 aV		
	Our Ref; CU/PWH/MR917			DCPI 2074/2007	
	Miss Angela MO				
	for Director of Legal 'Aid	IN THE DIST	RICT COURT OF THE		
Personal Backer 1. I w to i En old	Legal Aid Department Kowloon Branch Office 31~Floor Mongkok Government Office 30 Luuen Wan Street Mongkok Kowloon Dear Miss Mo, <u>Re: Madan</u> I interviewed and Prince of Wales Hospital thepersonal interview an Legal Aid Department. T				*
	 Physiotherapy P Statement of Ma Letter dated 31 Attendance nots Medical report Nov 2006 from Medical report 	下,現自顧作供如下: 1. 我是本案的第一被告人, 我和第二被告人:	是一名註冊中醫	:打醫館(下	

.

007









Step 2: Blackboard E-learning platform



Step 3: Case-based learning

- Students are required
 - Group-discussion via Blackboard Ediscussion board
 - Discuss and analyze the problems with a guideline flow:
 - Which party responsible for this medical incidence?
 - Any medical malpractice for this medical mishaps?
 - Evidence from all sides
 - Make a group conclusion
 - Present to the whole class with selfanalysis and reasonings
 - Further, self-reflection on the medical performance when facing the patients



Step 4: Group presentations -Explanation on the Critical Thinking Rubric





Group presentations

Analysing the cases





Demonstration for the mechanism of medical incident

Step 5: Criteria referenced assessment (CRA) on students' critical thinking



Assessment-Critical Thinking Rubric

CHTL - March 2013

Assessed by teachers according to the universitylevel Critical Thinking Rubric benchmarked with the Association of American Colleges and Universities (AAC&U)

Eva	luators are encouraged to assign a zero	to any work sample or collection	of work that does not meet level 1	performance.
	4	3	2	1
Interpretation	Student demonstrates clear, accurate, detailed and comprehensive understanding of the relevant facts, considers source of evidence for its accuracy, relevance, and completeness as well as the ability to draw information not available from assigned sources and organize the information with enough interpretation to develop a comprehensive analysis or synthesis. Interprets the information correctly and makes insightful statements.	Student demonstrates an adequate understanding of the relevant facts as well as the ability to organize the information with enough interpretation to develop a coherent analysis or synthesis. Interprets the information correctly and makes reasonable statements.	Student demonstrates limited understanding of the relevant facts as well as a limited ability to organize the information with limited interpretation but not enough to develop a coherent analysis or synthesis. Misinterprets part of the information, but makes some reasonable statements.	Student demonstrates an inadequate understanding of the relevant facts, presents biased interpretations of information, as well as a limited ability to organiz the information without any interpretation. Incorrectly misinterprets the information and makes uninsightful statements.
Analysis	Student demonstrates a sophisticated level of logic by using specific inductive or deductive reasoning to make logical, consistent and well developed inferences regarding premises; addresses implications and consequences; identifies facts and relevant information correctly. Thoroughly assesses quality of evidence and distinguishes between facts, opinions, and assumptions.	Student demonstrates an adequate level of logic and reasoning through supported inferences regarding solutions; addresses implications and consequences; identifies facts and relevant information correctly. Adequately assesses quality of evidence and distinguishes between facts, opinions, and assumptions.	Student demonstrates a superficial level of logic and reasoning through unsupported inferences regarding solutions. Partially assesses quality of evidence and distinguishes between facts, opinions, and assumptions.	Student demonstrates inadequate logic through unexplained, unsupported, or unreasonable inferences regarding solutions wit confusion regarding facts, opinions, and relevant, evidence, data, or information. Is not able to assess quality of evidence or distinguish between facts, opinions, and assumptions.
Justify and Theorize	Student articulates a detailed position and the reasoning behind it and develops reasonable and well thought-out conclusions/solutions. Fully recognizes biases and multiple points of view.	Student articulates a position and the basic reasoning underlying the position and develops reasonable conclusions/solutions. Adequately recognizes biases or multiple points of view.	Student articulates a position but does not present a clear line of reasoning behind it and develops unreasonable conclusions /solutions. Partially recognizes biases or multiple points of view.	Student does not articulate a clear position and fails to justify any conclusions/solutions. Does not recognize biases or multiple point of view.
Conclusions and Related Outcomes	Student accurately develops conclusions based on evidence and reasoning. Related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Student draws appropriate conclusions that can be partially supported by evidence and reasoning. Related outcomes (consequences and implications) are identified clearly.	Student draws conclusion based on partial evidence or incomplete reasoning. Some related outcomes (consequences and implications) are identified clearly.	Student is not able to draw conclusions that can be supported by evidence and reasoning. Related outcomes (consequences and implications) are oversimplified.

CRITICAL THINKING RUBRIC

Excerpted with permission from Assessing Outcomes and Improving Achievement: Tips and tools for Using Rubrics, edited by Terrel L. Rhodes. Copyright 2010 by the Association of American Colleges and Universities. Derived in part from Washington State University Critical Thinking, ubric. Derived in part from St. Peterburg Assessment Rubric for Critical Thinking.

Outcomes

- Assessment results and analysis posted on <u>Discussion Board</u> to show whether the students were
 - (1) <u>actively engaged</u> and undertake sound analysis;
 - (2) undertaking effective <u>teamwork</u> and construct <u>new thoughts</u> critically
 - (3) progress satisfactorily in clinical critial thinking and reasoning, such as interpretating, analysing, justifying, forming a final diagnosis, communicating and evaluating the whole clinical practice.

Student Feedback by Formative Review Exercise

FRE is a systematic study to provide instructors with formative feedback on:

- > Students' preferred learning approaches
- The impacts of the course instruction on students' learning (learning approaches and achievement)
- > Strength and weakness
- > Implications for instructional suggestions accordingly
- > Good practices

FRE Instruments

Study Process Questionnaire (SPQ) X2

- Conducted at the beginning (SPQ1) and the end (SPQ2) of a semester
- Examining students' change in their learning approaches (in terms of deep and surface approaches)

Learning Experience Inventory-Course (LEI-C)

- Examining students' learning experience from courses under OBTL
- Conducted at the end of the semester.

Study Process Questionnaire (*R-SPQ-2F*)

Higher score of "Deep Approach" implies in a particular course a student is more likely to be motivated by *intrinsic interests* and would like to maximize the learning by engaging in a search for meaning

Deep Approach = 1 + 2 + 5 + 6 + 9 + 10 + 13 + 14 + 17 + 18*

Higher score of "Surface Approach" implies a student is more likely to be motivated extrinsically and attempt to accomplish tasks with the minimum possible time and efforts.

Surface Approach = 3 + 4 + 7 + 8 + 11 + 12 + 15 + 16 + 19 + 20*

*numbers in the formula indicate the item number of the questionnaire

Learning Experience Inventory (LEI-C)

- LEI-C is designed to gain information on students' learning experience on the following <u>3</u> aspects in a particular course:
 - Category 1 What I am to learn? (Question 12, 13, 18 and 19)
 - Category 2 How to go about learning it? (Question 14, 15, 16 and 22)
 - Category 3 How well did I learn it? (Question 17, 20, 21 and 23)
- Alignment Index (maximum: 15)
 - measurement of the constructive alignment of the Course Intended Outcomes (ILOs), Teaching and Learning Activities (TLAs), and Assessment Methods (AMs) from students' perspectives
 - summation of the mean scores of Category 1, 2, and 3

Overview

	Course Code	Enrollment Size	Valid Responses [#]	% of Valid Responses			
2014-2015 Semester 1	CMED 3251/3261	28	22	78.57%			
Note: # Criteria of Valid Response: 1. Do not answer questions in a particular pattern consistently; 2. With Student ID, Course Code, and Session Number; 3. Responses of SPQ2 fulfill (1) and (2) and have matched with SPQ1. ^ Only Course Unit with valid response rate > 20% will be counted.							

SPQ1 & SPQ2 Comparison: Deep Approach and Surface Approach CMED3251/CMED3261 (n=22)





Mean Score of LEI-C Categories 1-3 CMED3251/CMED3261 (n=22)

Interpretation of Survey Results

- After the implementation of 1 semester, students' deep learning approach rose from 32.77 to 35.82, with statistical significance.
- This course provided students with highly positive and engaging learning experiences, since the students were clear with what they are expected to achieve, how they could achieve and in what ways their achievements could be ascertained.

Summary

- Critical thinking with deep approach is important for professional training, particularly meaningful for TCM students
- Case-based learning via online archive of medical cases is found effective to develop students' abilities of <u>critical thinking for</u> <u>those with deep approach and proactive learning attitude with</u> <u>intrinsic interest</u> for making informed and reasoned medical judgment in clinical contexts.
- The next steps for enhancing students' self-directed learning,
 - To expand this archive by incorporating more relevant medical cases,
 - more mobilization of students' intrinsic interest, and
 - ▶ to promote this pedagogy to other TCM courses.

References

- Biggs, J., Kember, D., & Leung, D. Y. P. (2001). The revised two-factor study process questionnaire: R-SPQ-2F. British Journal of Educational Psychology, 71, 133-149.
- Wong, E., Kwong, T., & Thadani, D. R. (2014). The Effects of Students' Perceptions of their Learning Experience on their Approaches to Learning: The Learning Experience Inventory in Courses (LEI-C). Education Journal, 3(6), 369-376.

Thanks you