Scenemulator: An Innovative Tutor Note to Facilitate Non-Specialist Tutor in PBL Tutorial Session

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Background: *The tutor notes are the principal learning material to assist the non-specialist tutors in facilitating the students in tutorial groups effectively.*
Objective: *This research aimed to study which tutor notes (scenemulators = scene + simulator + tutor notes and a typical one) is best to ensure effectiveness amongst Thammasat University preclinical tutors to facilitate in tutorial sessions.*
Material and Method: *Three of the scenemulators and one of typical tutor notes were formed based on the endocrinologist and endocrine block committees. After completion of each scenario over 3 consecutive years, twenty-two items with a five-rating scale questionnaire were co-operated to be completed by preclinical tutors at the Faculty of Medicine, Thammasat University (n = 21-22/year). Thirteen and six were the topics efficiency and the comparative satisfaction, respectively. The last three were the tutor notes most needed by the tutors. Data were analyzed using descriptive statistics (mean $\pm$ SD) and ANOVA.*
Results: *From the 85%-response data, mean scores (M) on the topics efficiency on scenemulators and the regular tutor notes were above 4.5 and 3, respectively. Noticeably, the more preferable tutor notes were scenemulator (p-value <0.001).*
Conclusion: *The present study demonstrated the potential of scenemulators in filling up uncertain significant matters and its effective use as a tool to assist non-specialist PBL tutors.*

Keywords: *Scenemulators, Tutor notes, Non-specialist PBL tutor, Problem-based learning (PBL)*

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Problem-based learning (PBL) is a learning process that has proved to be the most effective in facilitating both student critical thinking- and self-directed learning skills[1]. It has been widely implemented in medical curriculum for over the last three decades[2,3]. It was normally considered to put into pre-clinical year level in order to improve clinical, correlated performance instead of only emphasis on fragmented biomedical contents as gleaned from traditional teaching by lecturers[4]. Its process can finely tune the students to approach the patient cases (as the paper-based scenarios) and promote them to explore not only their pre-existing knowledge (in brainstorming sessions) but also their logical thinking during the period of the tutorial sessions. The magic number to run the tutorial process is "7" which includes (1) clarifying terms, (2) defining problems, (3) "brainstorming" session, (4) reviewing steps 2 and 3 and hypothesis setting, (5) formulating "learning objectives", (6) private, self-directed learning and (7) sharing results from private study[5]. The key person assisting the students to build up their reasoning-solving capabilities for life-long learning in the tutorial process is the tutor.

Ideally, the tutor has the important role in triggering the students to "learn-how-to-learn", not to provide information or to give mini-lectures in the small groups. The active roles needed from tutors in PBL tutorial groups not only include encouraging the students to identify and achieve the learning objectives, triggering the students to create the critical thinking skill but also giving them essential feedback[4,6]. They play as if coaches responsible for facilitating the students to go through with ease the processes that finally induce their own critical thinking. It is, however, still a controversial debate as to whether the good tutor has to be the content- or process but a non-content-expertise[4,7-10] though, from the students' view[5,11], they valued content expertise (MD tutor) rather than the

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non-content one (non-MD tutor). Correspondingly, from non-MD tutors' point, they themselves also were concerned and felt unease when the discussion in the tutorial group was out of their areas[12,13]. Thus, how to reassure these tutors to be much more confident in guiding or facilitating the students in tutorial sessions was an urgent need to be achieved. One of most important tools to support non-specialist tutors is the effective tutor notes.

Tutor notes are the learning materials like handbooks or short notes that briefly include all the essential information of each case. Conventional tutor notes are normally in text form including the explanation of the case, providing the general background of pathophysiology, answering the learning objective etc. Because of the limitation of the text-format that regularly emphasized explanations word-by-word, it actually enables facilitating the tutor to understand the case in the whole scene. Moreover, it cannot be seen as guidance for the non-expert tutor, step-by-step, as truly occurs in the tutorial group. Thus, the aim of the present study was to design an innovative tool, which was mentioned as "Scenemulator" to help non-specialist PBL tutor step-by-step to facilitate their students in tutorial groups.

Scenemulator came from the words "Scenario + simulator + tutor note". It imitated the experiences in steps 1-5 getting from tutorial process in three of four scenario in Endocrinology block. It illustrated those of the clarifying terms, defining problems, analyzing problems, setting hypothesis, formulating/learning objectives and concluding the general principles for each scenarios, which were arranged sequentially in tutor guides of the Endocrine block. Objectively, it was constructed to (1) assist non-specialist PBL tutors in increasing much more confidence to facilitate tutorial sessions, (2) diminish the diversity of the outcomes in tutorial sessions, and (3) having more adequate and qualified tutor notes. The authors postulated that the scene-mulator would not only assist the preclinical tutor to effectively go through in the small groups, but also promote the tutor to be much more confidence and maintain standards among the groups.

Material and Method

Scenemulators illustrated those of clarifying terms, defining problems; analyzing problems, setting hypothesis, formulating/learning objectives and concluding the general principles for each scenario to be constructed as shown as an example in Fig. 1 and 2.

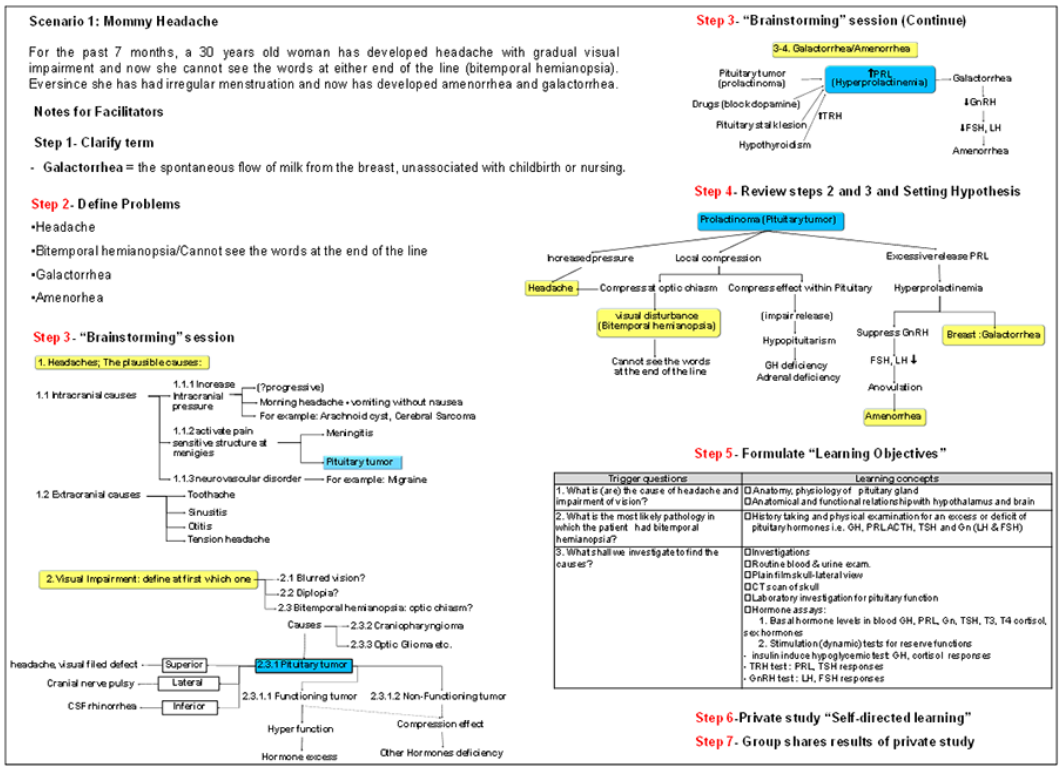

Fig. 1 Example of scenemulator that is imitated step 1-5 used in the present study.

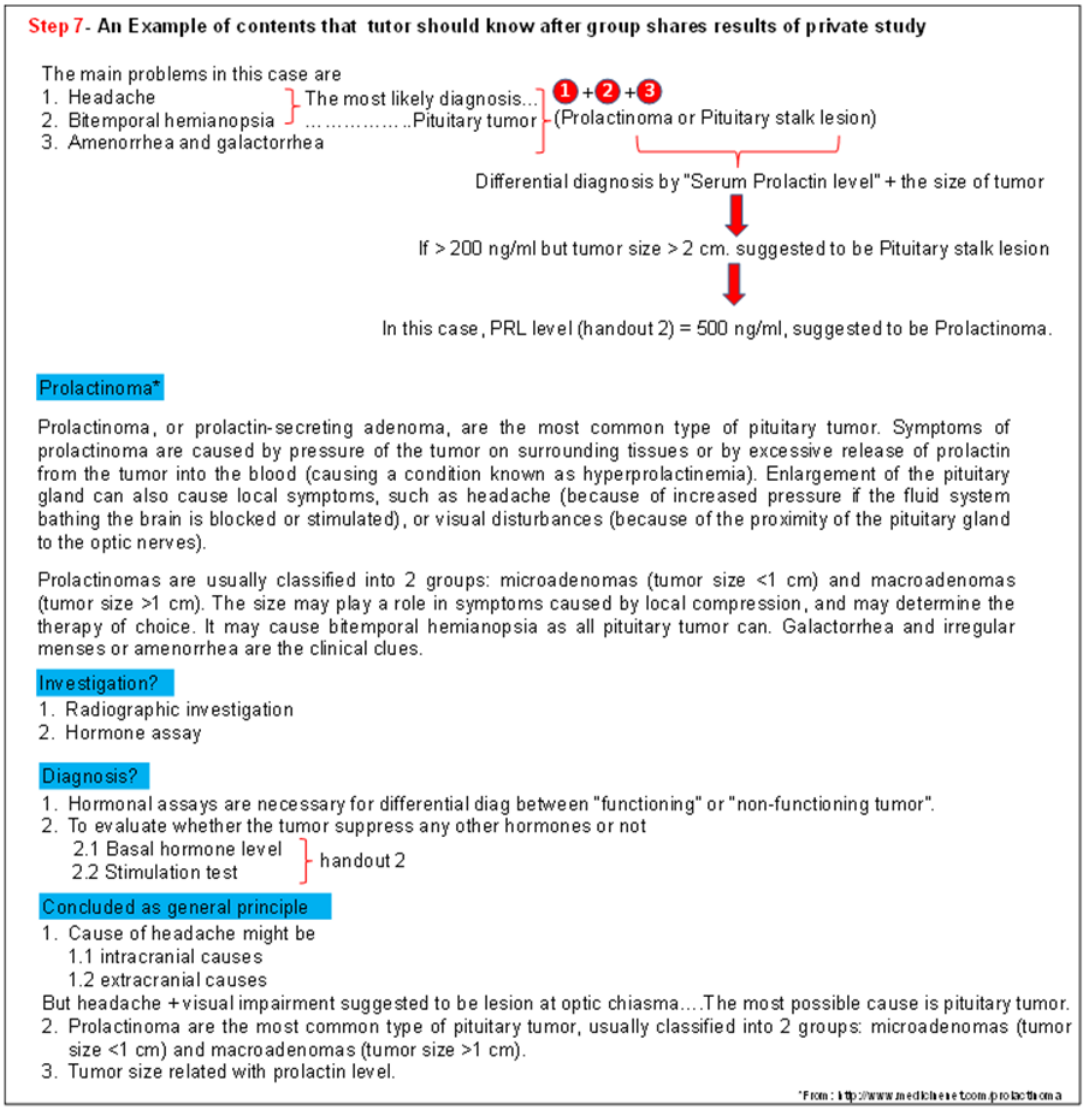

Fig. 2 Example of scenemulator that is imitated step 7 used in the present study.

It was implemented in three of four scenarios in 3 consecutive years of the Endocrine block. Whereas, the last one was a typically tutor note that was covered with all the essential information concluded in text form. After completion of each scenarios from 3 consecutive years, preclinical-tutors at the Faulty of Medicine, TU (n = 21-22/year) were assigned to complete twenty-two items with a five-rating scale questionnaire. Thirteen and six were the topics of efficiency and the comparative satisfaction, respectively. The last three topics were the tutor notes that were most needed by the tutors. Data were analyzed using descriptive statistics in terms of mean $\pm$ SD and ANOVA.

Results

The response rate was 85%. When comparing between scenemulator and regular tutor notes, scenemulator tutor notes were clearly the most effective compared with the latter ones. Mean scores (M) of the efficiency topics in steps 1-4 in the tutorial process (i.e. clarifying terms, defining problems, brainstorming and hypothesis setting) was above 4.5. While mean scores of regular tutor notes was in acceptable scale (M = 2.93$\pm$1.44) except on step 4 (M = 4.25$\pm$0.44). It was significant difference between those efficacies as shown in Fig. 3. Interestingly, the more clearly preferable tutor notes were scenemulators (Mean average from

sceneraio 1-3 = 4.64±0.46, mean average from sceneraio 4 = 3.20±0.62) as shown in Fig. 4 (*p*-value <0.001).

Discussion

Tutors in problem-based learning (PBL)

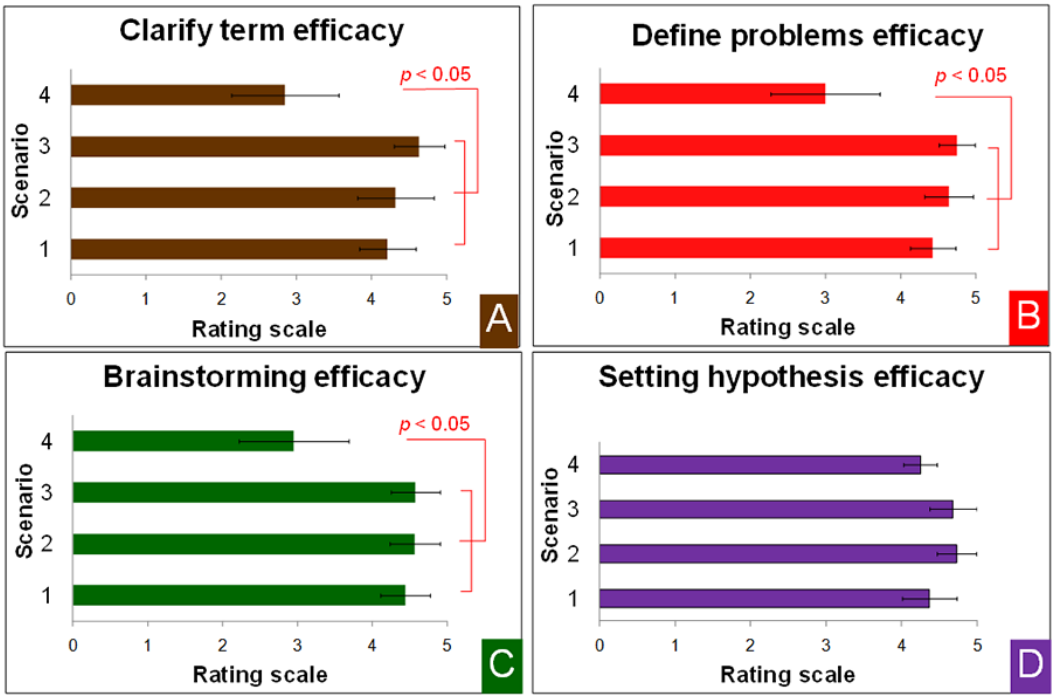

Fig. 3 Mean score of the efficiency of scenemulator (scenario 1-3) and the regular tutor note (scenario 4). A: Step 1 (Clarify term efficacy: mean average from sceneraio 1-3 = 4.3±0.81, mean average from sceneraio 4 = 2.85±1.42), B: Step 2 (Define problems efficacy: mean average from sceneraio 1-3 = 4.6±0.6, mean average from sceneraio 4 = 3.0±1.45), C: Step 3 (Brainstorming efficacy: mean average from sceneraio 1-3 = 4.53±0.66, mean average from sceneraio 4 = 2.95±1.47) and D: Step 4 (Setting hypothesis efficacy: mean average from sceneraio 1-3 = 4.59± 0.64, mean average from sceneraio 4 = 4.25±0.44).

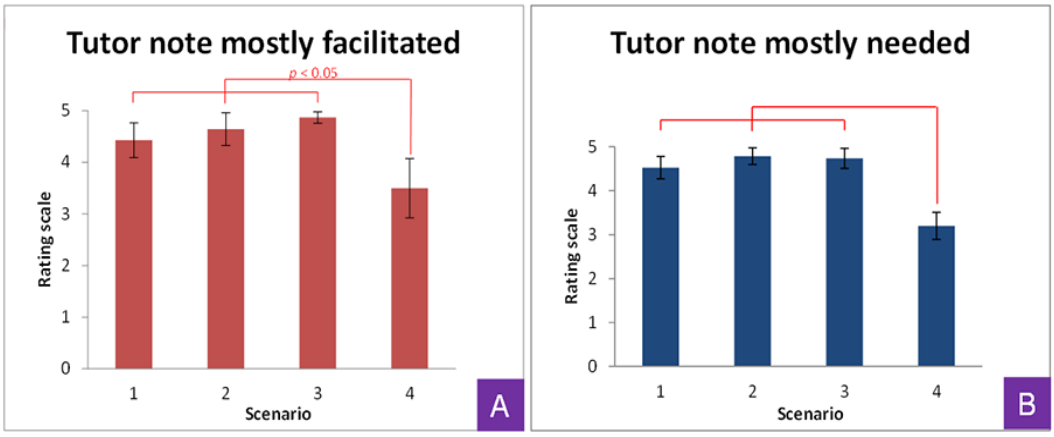

Fig. 4 A) Mean score of the tutor note mostly facilitated (mean average from sceneraio 1-3 = 4.64±0.60, mean average from sceneraio 4 = 3.50±1.15). B) Mean score of the tutor note mostly needed (mean average from sceneraio 1-3 = 4.64±0.46, mean average from sceneraio 4 = 3.20±0.62). Scenario 1-3 is scenemulator, scenario 4 is regular tutor note.

tutorials have a multifaceted role to facilitate students in the group. This includes encouraging the students to achieve knowledge from themselves and from the groups, retrieving critical thinking skills and coaching the group processes. In many medical faculties, it was normally non-MD tutor handling this position. Uneasiness for those of non-expert tutors to facilitate in out of their specialist areas reflect to the students' outcome in the group. Few studies were investigated how to help non-expert tutors in the PBL tutorial process to be much more confident in facilitating the tutorial sessions in non-expertise area.

Scenemulator is the innovative tool to help those tutors. Its efficacy has been proven significantly different from the regular one. It was correlated well as mention by Wood[5] and Groves et al[12] that not only having the training course to be the facilitator but also having adequate and quality tutor notes might assist non-specialist tutors to be a good PBL tutor. Moreover, as suggested by Schmidt et al[9] that to support the tutor it is necessary to have the effective tutor tool specifying step-by-step by the tutor's medical specialty in relation to a case scenario. In addition, it was actually compulsory for the faculty committee that the tutor preparation and standardization should be done before the semester started. Even though Matthes et al[14] reported insignificant difference in the relationship between learning outcome and the tutor expertise if assessed by traditional evaluation. However, the more the faculty qualifies the tutor, the more benefit for the students. Corresponding with the report of Gilkison[15] that fulfilling self-understanding/self-clarifying of non-expert tutors would essentially promote the learning environment in tutorial sessions. Additionally, as recommend by Eagle et al[16] and Ravens et al[17] that non-specialist tutors should be trained to understand case objectives, identify the clinical problem and discuss with experts. Hence, Faculty of Medicine, Thammasat University has also performed this class before the tutorial sessions begin. However, it still needs the more effective tutor notes like "scenemulator" to facilitate those of preclinical tutor, step-by-step, to handle the tutorial process. In conclusion, implementation of scenemulators in other blocks should be considered. This approach might standardize multidisciplinary, non-specialist tutors to facilitate completely the tutorial sessions.

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Authors' contributions

PR contributed in the planning, data collection and writing the manuscript. NS was responsible for data analysis and statistic illustration. US and SK played role as the secretary of the Endocrine block and conducted some parts of scenemulators. SP was the specialist who wrote the text form of the tutor notes. VK gave her hand to collect the data. All of the authors read the manuscript, contributed in correcting it and approving its final version.

Potential conflicts of interest

None.

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คู่มือครูเลียนแบบสถานการณ์ในห้องกลุ่มย่อย: คู่มือครูแนวใหม่ที่จะช่วยอาจารย์ประจำกลุ่มย่อยที่ไม่ใช่ผู้เชี่ยวชาญอำนวยกระบวนการกลุ่มย่อยในการเรียนการสอนแบบใช้ปัญหาเป็นหลัก

ปนัดดา โรจน์พิบูลสถิตย์, นุชนาฏ เสือเล็ก, อัมรัตน์ ศรีสวัสดิ์, สุปรานี กองคำ, สุธน พรธิสาร, วชิราภรณ์ กรุดปทุม

ภูมิหลัง: *คู่มือครูเพื่อช่วยในกระบวนการดำเนินกลุ่มย่อยเป็นวัสดุการเรียนรู้ที่สำคัญที่จะช่วยครูที่มิใช่ผู้เชี่ยวชาญในศาสตร์นั้น ๆ อำนวยกระบวนการกลุ่มย่อยได้อย่างมีประสิทธิภาพ*

วัตถุประสงค์: *เพื่อศึกษาว่าคู่มือครูแบบใด (ระหว่างคู่มือครูที่เรียกว่าคู่มือครูเลียนแบบ สถานการณ์ในห้องกลุ่มย่อย = โจทย์ปัญหา + สถานการณ์จำลองที่ดำเนินกระบวนการดังเช่นในห้องกลุ่มย่อย + คู่มือครูและคู่มือครูแบบปกติดั้งเดิม) จะมีประสิทธิภาพในการช่วยอาจารย์พรีคลินิก มหาวิทยาลัยธรรมศาสตร์ในการอำนวยกระบวนการกลุ่มย่อยได้อย่างมีประสิทธิภาพที่สุด*

วัสดุและวิธีการ: *กรรมการรายวิชาระบบต่อมไร้ท่อและแพทย์ระบบต่อมไร้ท่อได้ร่วมกันสร้างคู่มือครูเลียนแบบสถานการณ์ในห้องกลุ่มย่อยสำหรับสามโจทย์ปัญหาและคู่มือครูแบบปกติดั้งเดิมสำหรับหนึ่งโจทย์ปัญหาจากนั้นอาจารย์พรีคลินิก คณะแพทยศาสตร์ มหาวิทยาลัยธรรมศาสตร์ ที่เป็นอาจารย์ประจำกลุ่มย่อย (จำนวน 21-22 คนต่อปี) ได้ร่วมกันตอบแบบสอบถามที่มีระดับตัวเลือก 5 ระดับ จำนวน 22 ข้อในการสอนแบบกลุ่มย่อยของระบบต่อมไร้ท่อเป็นเวลา 3 ปีต่อเนื่องกัน โดยเป็นข้อคำถามที่เกี่ยวกับประสิทธิภาพและข้อคำถามเปรียบเทียบความพึงพอใจของคู่มือครูแต่ละแบบ 13 ข้อ และ 6 ข้อ ตามลำดับในขณะที่ข้อคำถาม 3 ข้อสุดท้ายเป็นข้อคำถามที่ถามถึงคู่มือครูแบบที่อาจารย์ประจำกลุ่มย่อยต้องการที่สุด ข้อมูลจะถูกวิเคราะห์โดยใช้สถิติเชิงพรรณนา (การหาค่าเฉลี่ย ± ค่าเบี่ยงเบนมาตรฐาน) และทำการวิเคราะห์ทางสถิติโดยโปรแกรม ANOVA*

ผลการศึกษา: *จากข้อมูลตอบกลับ (ร้อยละ 85) พบว่าค่าเฉลี่ยของข้อคำถามที่เกี่ยวกับประสิทธิภาพของคู่มือครู เลียนแบบสถานการณ์ในห้องกลุ่มย่อยและคู่มือครูแบบปกติดั้งเดิมได้ผลอยู่ในระดับดีและปานกลาง (ค่าเฉลี่ย 4.5 และ 3, ตามลำดับ) และเป็นที่น่าสังเกตว่าคู่มือครูแบบที่อาจารย์ประจำกลุ่มย่อยต้องการเป็นคู่มือครูเลียนแบบสถานการณ์ในห้องกลุ่มย่อย (p-value <0.001)*

สรุป: *การศึกษาในครั้งนี้แสดงให้เห็นถึงศักยภาพของคู่มือครูเลียนแบบสถานการณ์ในห้องกลุ่มย่อยในการเติมเต็มส่วนเนื้อหาสำคัญและยังเป็นเครื่องมือที่มีประสิทธิภาพในการช่วยอาจารย์ประจำกลุ่มย่อยที่ไม่ได้เป็นผู้เชี่ยวชาญในระบบต่อมไร้ท่อในการดำเนินกระบวนการกลุ่มย่อย*