Empirical report: Application of sandwich principle in teaching seminar for faculty development

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Abstract

Throughout the last few decades, both college teachers and students have undergone extensive changes. Such changes have resulted in increasing demands on faculty to be creative and effective teachers, and successful researchers. Faculty development is recognized by many education organizations as an essential support framework provided to faculty members to assist them in responding to the challenges of their multiple roles and evolving responsibilities. Teaching Seminar is an important approach used to improve teaching abilities of teachers in our college. However, it is frequently characterised by a lack of participation of teachers. This study is to confirm the effect of application of Sandwich Principle to regular teaching seminars. The results of on-site observation and questionnaire showed that teachers participated in discussions more actively; the depth of discussions was greatly improved when the seminars were conducted according to the Sandwich Principle. Therefore, the teaching seminar with the Sandwich Principle is an effective approach to promote faculty professional development. The detailed procedure and experience of the teaching seminar also were described in this paper. The experience will add benefits to teachers' in class teaching and current faculty development of higher education.

Keywords: sandwich principle; teaching seminar; faculty development; sandwich teaching method

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1. Introduction

Throughout the last few decades, both college teachers and students have undergone extensive changes (Abulon, 2014). As the university enrolment increasing, the number of full-time Chinese university teachers increased to 1.0897 million in 2013; 62% of them are young teacher (China's Ministry of Education, 2014). How to help them to adapt quickly to role changes (from students to teachers) and improving their teaching abilities have become significant issues. The second challenge is associated with the rapid development of complex educational technologies. Such changes have resulted in increasing demands on faculty to be creative and effective teachers, and successful researchers (Lisa & Lyn, 2014). Thus, to meet these demands, Faculty members now must master modern educational technologies and methods in a relatively short period of time to improve the effects of their in-class teaching (Calaguas, 2013). Faculty development is recognized by many education organizations as an essential support framework provided to faculty members to assist them in responding to the challenges of their multiple roles and evolving responsibilities (Leslie, Baker, Egan-Lee, Esdaile, & Reeves, 2013).

Stritter initially conceptualized faculty development as strategies to improve faculty members' teaching performance (Stritter, 1983). Faculty development has since broadened as reflected in Bland et al.'s definition of faculty development as a planned programme to prepare institutions and faculty members for their roles in the areas of teaching, research administration and career management (Bland, Schmitz, Stritter, Henry, & Alieve, 1990, p. 16). Currently, many faculty development activities have been designed to enhance teaching in education. These include formal training programs (Morahan, Kasperbauer, Mcdade, Aschenbrener, Triolo et al., 1998), fellowships (Korschun, Redding, Teal, & Johns, 2007), workshops (Steinert, Nasmith, & Daigle, 2003), seminars (Woods & Griggs, 1994), faculty internships (Seavey & Hiller, 1984) and mentoring programs (Garman, Wingard, & Reznik, 2001).

In China, faculty development is just started and being paid more and more attention in recent years. To improve faculties' teaching abilities and promote educational reform, many faculty development activities were performed in our college (Xuzhou Medical College), including special topic training, teaching seminar, workshop and teaching demonstration. However, due to the introverted nature of the Chinese people, teachers did not actively participate in discussions in teaching seminars (Ningning, Martin, Annemie, Guoyuan, & Chang, 2014). To avoid awkward silences, the presenter called on instructors by name or requested that they took turns speaking. Consequently, participants engaged passively, issues were not explored in depth. The discussion topics were not thoroughly understood. The objectives of teaching seminars were thus not achieved.

The Sandwich Principle is a teaching method that applies group discussion, cross-study, and study reporting activities during classroom learning process (named as Sandwich Teaching Method). It motivates students to communicate with one another and to learn actively, thus improving student abilities to study independently and acquire new knowledge (Kadmon, Strittmatter-Haubold, Greifeneder, Ehlail, & Lammerding-Köppel, 2008). The Sandwich Teaching Method was first introduced at the beginning of the 19th century in Britain and was initially used as a teaching method based on the "practice-study-practice" principle, i.e., combined theoretical and practical learning (Xiumin, 2004). The Medical school of Heidelberg University first introduced the Sandwich Principle through its small-scale medical classes (Yaling, Jianhui, Yixiang, & Fucheng, 2008). In 2006, the Tongji Medical College of Huazhong University of Science and Technology sent teachers to Heidelberg University to study the Sandwich Teaching Method and subsequently introduced it to China for the first time. In recent years, through its "National Medical University Faculty's Educational Methods Training Class", the Tongji Medical College of the Huazhong University of Science and Technology had introduced the Sandwich

Principle to medical colleges all over the country.

To address the problems we encountered in our teaching seminars, we incorporated Sandwich Principle into teaching seminars. We hope to make the teaching seminar more effectively by the form of Sandwich Principle. We will describe the whole procedures of Sandwich Teaching Method, and introduce the actual experience of the teaching method with Sandwich Principle in this study.

2. Methodology and methods

2.1 Study Design

The study was performed by Center for Teaching and Faculty Development of Xuzhou Medical College. We carried out two topic-based teaching seminars with the topic of "Teaching Faculty". On one hand, we want to confirm the effect of application of Sandwich Principle in teaching seminar. On the other hand, we introduced the concepts of Sandwich Teaching Method and faculty development. The teaching seminars were organized as following description. The effects were evaluated by on-site observation and questionnaire survey. The study was approved by the Research Ethics Committee of Xuzhou Medical College (Ref No. SCXK 2012-0005). A consent form was obtained from each participant.

2.2 Participants

All of the authors are the staffs of Center for Teaching and Faculty Development of Xuzhou Medical College with more than three years of experience in faculty development project management. 50 participants are frontline instructors of Xuzhou Medical College who had participated at least once in regular teaching seminar prior to the study.

2.3 Preparation

Topic and Presenter - Teaching issues that concern the majority of teachers are typically selected as teaching seminar topics. Such topics motivate teachers to share their teaching experiences and views on educational reform with other teachers while also sharing domestic and international educational trends with other teachers. On one hand, the topics and presenters can be recommended by the teaching offices of secondary teaching units (colleges or departments). For example, Center for Teaching and Faculty Development of Xuzhou Medical College announced a "Call for teaching seminar topics and presenters for 2014" at the end of 2013, and secondary teaching units recommended a total of 10 seminar topics and 10 presenters. On the other hand, topics and presenters are also proposed by the teaching research institution of the university or college, based on on-going domestic and international educational trends. For example, in early 2014, the Center for Teaching and Faculty Development introduced a series of topics on "Assessment and Evaluation", "Curriculum Integration", "Massive Open Online Courses (MOOC)", "Situational Teaching" and "Faculty Development".

Registration - Immediately after selecting seminar topics and presenters, seminar information should be delivered to instructors. Then, the registration procedures should be established. We disseminated the seminar information to potential participants mainly through three channels: 1) notice through the college website that included information on seminar topics, presenters, timing, location, registration procedures and group sizes; 2) notice teaching office directors of secondary teaching units, who notified instructors; and 3) notice instructors through the QQ group (a web-based communication platform). Additionally, to guarantee seminar quality, participation was limited to approximately 25 instructors, and participants were required to complete a registration form disclosing their affiliated college, major, and department.

Presenter Preparation - The presenter prepares an introduction based on the teaching seminar topic and then introduces the discussion topic. The introduction runs for approximately 10 minutes. Then the presenter

presents 4 to 6 questions, depending on the number of groups involved, to the groups for discussion.

Grouping and Numbering - For a group of 25 participants, instructors were equally divided into five groups named A, B, C, D, E and instructors numbered 1, 2, 3, 4, and 5. Twenty-five individual number plates numbered A1, A2, A3…E5 were made (Figure 1A). The five group number plates were labelled Group A on one side and Group 1 on the other, Group B on one side and Group 2 on the other, etc (Figure 1B).
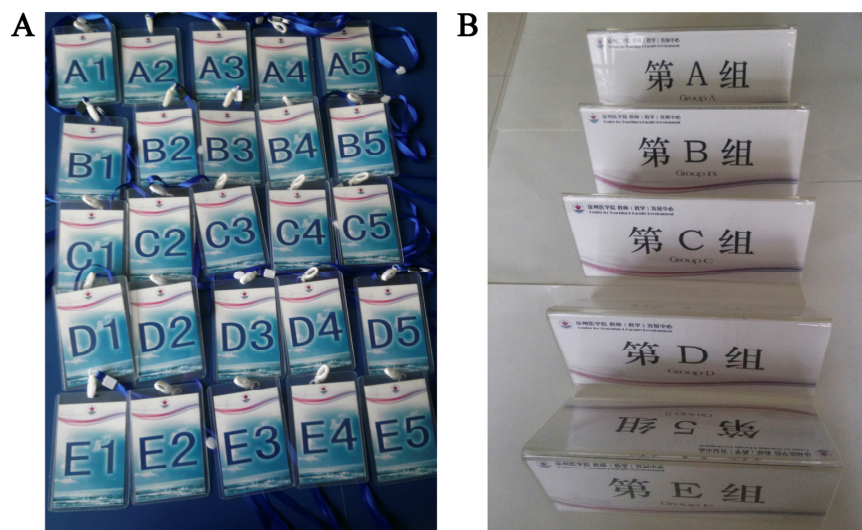

Figure 1. The individual number and group number plate. A: The twenty-five individual number plates; B: The five group number plates.

Conference Room Set-up - Conference room selection and set-up are central to the teaching seminar with Sandwich Principle (Sandwich Teaching Seminar). An appropriate conference room for such a seminar includes tables that can be reorganised freely. The conference room must be set up prior to the seminar. For example, for a seminar with 25 participants, we positioned tables evenly apart and set up the table number plates in advance (Figure 2). In addition, drinks and snacks were offered to encourage a welcoming and relaxed communication environment.
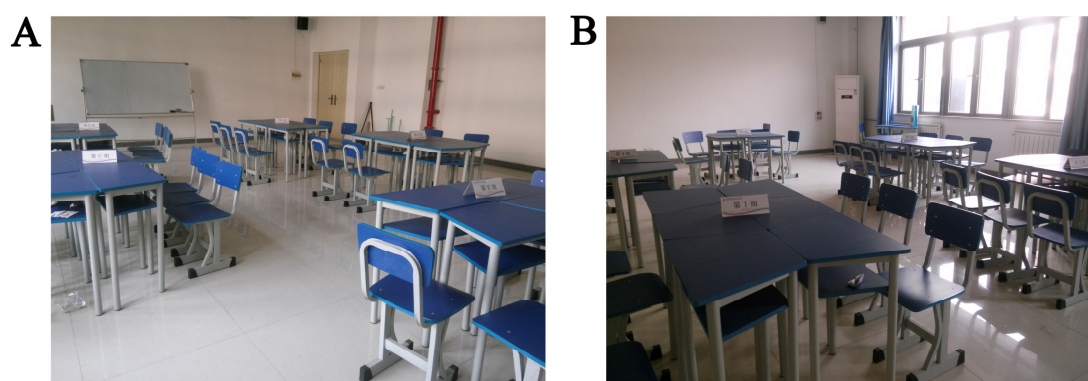

Figure 2. Conference room set-up. A: The first grouping conference room set-up: Group A, B, C, D, E; B: The second grouping conference room set-up: Group 1, 2, 3, 4, 5.

2.4 Procedures

Number Plates and Seating Arrangements - Before entering the conference room, participants received random number plates from the organisers and were seated according to this numbering (Table 1).

Table 1

The First Grouping

Group	Members
Group A	A1, A2, A3, A4, A5
Group B	B1, B2, B3, B4, B5
Group C	C1, C2, C3, C4, C5
Group D	D1, D2, D3, D4, D5
Group E	E1, E2, E3, E4, E5

Presenter Introduction - According to the topic of the teaching seminar, the presenter gave an approximately 10-minute introduction and presented five discussion questions about faculty development.

Group Discussion - Each group discussed one question for 20 minutes. Questions provided for discussion were shown in Table 2.

Table 2

Questions for Each Discussion Group

Group	Questions
Group A	1. What is faculty development?
Group B	2. In which areas of teaching is professional development needed?
Group C	3. How should faculty development be conducted?
Group D	4. What challenges have you faced over the course of your own teaching development?
Group E	5. What resources do you expect the college to provide for the purposes of faculty development?

Cross-Sharing - A 20-minute period was allocated to cross-sharing. After the group discussion, group members 1, 2, 3, 4 and 5 were reorganised into new groups. All group members holding a number 1 formed group 1, all participants holding a number 2 formed group 2, etc. The teachers sat in their new groups accordingly (Table 3). Each participant was required to tell new group what his or her original group had discussed. In turn, participants were exposed to all five questions. Finally, the participants switched groups again to discuss new questions.

Table 3

The Second Grouping

Group	Group members
Group 1	A1, B1, C1, D1, E1
Group 2	A2, B2, C2, D2, E2
Group 3	A3, B3, C3, D3, E3
Group 4	A4, B4, C4, D4, E4
Group 5	A5, B5, C5, D5, E5

Group Report - After the cross-sharing activity, the participants returned to their original groups. They were asked to discuss suggestions that they had heard during the sharing phase and summaries final discussion conclusions. Finally, each group recommended one teacher to give a report on these conclusions. The discussion phase took 20 minutes, and the reporting phase was strictly limited to four minutes.

Presenter Conclusion - After each group representative report, the presenter made a 10-15 minute presentation summarizing the conclusions of each group. The presenter also commented on questions that were not adequately explored during the discussion phase. This phase may occasionally involve inviting the educational director of the college to discuss practical teaching process challenges with instructors directly. In this teaching seminar, we invited the Dean of the Academic Affairs Division. The Dean of the Academic Affairs Division listened closely to participant suggestions, answered questions and described college resources offered for faculty teaching development.

2.5 Summary and Feedback

After each teaching seminar, the organizers must summaries and offer feedback on the seminar. First, organizers must record key issues discussed during the teaching seminar and share these points with instructors. We usually shared information with instructors through the QQ group. Second, to expand the influence of teaching seminars on instructors, teaching seminar outcomes will be made available on the college website in the form of a news report. Third, we communicated with participants through interviews or questionnaires to examine teaching seminar features to improve upon in the future.

3. Results

Our on-site observations showed that the participation of instructors in this Sandwich Teaching Seminar was greatly improved. Instructors expressed their opinions more actively. The group's effectiveness was enhanced. The depth of the discussion was also greatly improved.

To further understand the practical benefits of the Sandwich Teaching Seminar, participating instructors completed questionnaires after two seminars. A total of 50 questionnaires were distributed to the instructors and were all returned, representing a 100% response rate. The survey questions and results are shown in Table 4. Forty-eight of the 50 instructors surveyed agreed (25 strongly agreed and 23 agreed) that the Sandwich Principle was effective when applied to Teaching Seminars. Fifty teachers agreed (30 strongly agreed and 20 agreed) that the Sandwich Principle counteracted the monotony of typical Teaching Seminars. Forty-seven teachers agreed (33 strongly agreed and 14 agreed) that all aspects of the seminar were lively and interactive. Forty-nine teachers agreed (26 strongly agreed and 23 agreed) that the seminar had enhanced their teaching approach. Forty-eight teachers agreed (26 strongly agreed and 22 agreed) that the seminar had yielded strong outcomes overall. If similar seminars were conducted in the future, 47 teachers (27 strongly agreed and 20 agreed) would like to participate.

Table 4

Instructor responses to individual questionnaire items regarding the Sandwich Teaching Seminar (N=50)

Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1. The Sandwich Principle is effective when applied to the Topic-based Teaching Seminar.	25	23	1	1	
2. The approach counteracted the monotony of regular Topic-based Teaching Seminars.	30	20			
3. Each seminar session was lively and interactive.	33	14		2	1
4. The seminar enhanced your teaching approach.	26	23		1	
5. The seminar yielded strong outcomes overall.	26	22		1	1
6. If similar seminars were conducted in the future, would you be willing to participate?	27	20	2	1	

4. Discussion

The Sandwich Principle is a teaching method in promoting student learning motivation and improving student abilities to study independently and acquire new knowledge. Though the principle has customarily been applied to in-class teaching scenarios, it has not yet been applied to faculty development. Our study showed that the Sandwich Principle is effective when used in Topic-based Teaching Seminars. The Sandwich Principle can motivate teachers to participate in discussions and to effectively promote their professional development. Hence, it constitutes an effective tool for faculty development. However, the Sandwich Teaching Seminar must be

specifically structured to obtain optimal results. The following issues must be considered when developing the Sandwich Teaching Seminars.

4.1 Discussion Question Design

It is essential that discussion questions be designed properly. First, questions must closely reflect the seminar topic. Questions must be differentiated rather than repetitive. Second, questions must be suitable for discussion and further exploration. In addition, the difficulty level and the question depth must be balanced.

4.2 Prior Announcement of Seminar Topics and Discussion Questions

Over the course of the study, we realised that to enable the instructors to discuss the questions more deeply would obtain better teaching outcomes. It may be beneficial to inform the participants of seminar topics and questions beforehand, as the instructors could come to the seminar with an understanding of related literature and topic-related content. We shared related literature through the QQ group, allowing participants to review pertinent information in advance of each seminar.

4.3 Topic-based Teaching Seminar Pacing

The Sandwich Teaching Seminar was divided into phases, including the presenter's introduction, a group discussion, cross-sharing activities, group reporting, presenter summary, and many others. The presenter must establish a time limit for each phase in advance, even periods for changing seating during the seminar. Before initiating each phase, the presenter should notify participants the time limit and follow it strictly during the seminar.

4.4 Managing Relationships with Related Departments

Over the course of the Sandwich Teaching Seminar organisation, relationships with related departments must be managed properly. It is important that cooperation with these departments should be achieved. On one hand, relationships with the secondary college educational administration office must be managed properly, as this department publicises the seminar and manages registration tasks. Additionally, to build stronger relationships with related functional departments, we may invite university educational administration and related functional department directors to reflect on teachers' suggestions: solving problems throughout the educational development process while offering necessary financial support.

5. Conclusions

Although Sandwich Teaching Method is extensively used in England, Germany, China, and so on, as far as we know, there is not one English paper to introduce this method in detail, and there is no report demonstrating that Sandwich Principle is applied to faculty development programs. In this study, we introduced the detailed procedures of Sandwich Teaching Method and its application in teaching seminar with our practical experience. In addition, we confirmed the effects of application Sandwich Principle in teaching seminar as a faculty development program. It will add benefits to teachers' in class teaching and current faculty development of higher education.

6. References

Abulon, E. L. R. (2014). Basic education teachers' concept of effective teaching: Inputs to teacher education curriculum in the Philippines. *International Journal of Research Studies in Education, 3*(3), 35-48. http://dx.doi.org/10.5861/ijrse.2014.723

Bland, C. J., Schmitz, C. C., Stritter, F. T., Henry, R. C., & Alieve, J. J. (1990). *Successful faculty in academic medicine: Essential skills and how to acquire them*. New York: Springer.

Calaguas, G. M. (2013). Teacher effectiveness scale in higher education: Development and psychometric properties. *International Journal of Research Studies in Education, 2*(2), 3-20. http://dx.doi.org/10.5861/ijrse.2012.108

Garman, K. A., Wingard, D. L., & Reznik, V. (2001). Development of junior faculty's self-efficacy: Outcomes of a National Center of Leadership in Academic Medicine. *Academic Medicine, 76*(10), S74-S76. http://dx.doi.org/10.1097/00001888-200110001-00025

Korschun, H. W., Redding, D., Teal, G. L., & Johns, M. M. E. (2007). Realizing the vision of leadership development in an academic health center: The Woodruff Leadership Academy. *Academic Medicine, 82*(3), 264-271. http://dx.doi.org/10.1097/ACM.0b013e31803078b5

Kadmon, M., Strittmatter-Haubold, V., Greifeneder, R., Ehlail, F., & Lammerding-Köppel, M. (2008). The sandwich principle--introduction to learner-centred teaching/learning methods in medicine [In German]. *Z Evid Fortbild Qual Gesundhwes, 102*(10), 628-633. http://dx.doi.org/10.1016/j.zefq.2008.11.018

Lisa, A. L., & Lyn, F. J. C. (2014). Preparing staff for problem-based learning: Outcomes of a comprehensive faculty development program. *International Journal of Research Studies in Education, 3*(4), 53-68.

Leslie, K., Baker, L., Egan-Lee, E., Esdaile, M., & Reeves, S. (2013). Advancing faculty development in medical education: a systematic review. *Academic Medicine, 88*(7), 1038-1045. http://dx.doi.org/10.1097/ACM.0b013e318294fd29

Morahan, P. S., Kasperbauer, D., Mcdade, S. A., Aschenbrener, C. A., Triolo, P. K., Monteleone, P. L., Counte, M., & Meyer, M. J. (1998). Training future leaders of academic medicine: Internal programs at three academic health centers. *Academic Medicine, 73*(11), 1159-1168. http://dx.doi.org/10.1097/00001888-199811000-00012

Ningning, Z., Martin, V., Annemie, D., Guoyuan, S., & Chang, Z. (2014). Does teacher-centered teaching contribute to students' performance in primary school? A video analysis in Mainland China. *International Journal of Research Studies in Education, 3*(3), 21-34.

Stritter, F. T. (1983). Faculty evaluation and development. *Handbook of Health Professions Education, 1983*, 294-318.

Steinert, Y., Nasmith, L., & Daigle, N. (2003). Executive skills for medical faculty: A workshop description and evaluation. *Medical Teacher, 25*(6), 666-668. http://dx.doi.org/10.1080/0142159032000150485

Seavey, J. W., & Hiller, M. D. (1984). Faculty development in health administration: A case study of faculty internships. *Journal of Health Administration Education, 2*(1), 75-81.

The education ministry of China. (2014). *National education career statistical bulletin in 2013*. Retrieved from http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/moe_633/201407/171144.html

Woods, S. E., & Griggs, G. K. (1994). A curriculum for teaching faculty budgeting and financial management skills. *Family Medicine, 26*(10), 645-647.

Xiumin, Z. (2004). The application of sandwich teaching method in higher education [In Chinese]. *Higher Education Exploration, 2*, 46-48.

Yaling, H., Jianhui, M., Yixiang, P., & Fucheng, C. (2008). The application of sandwich teaching method in Medical education [In Chinese]. *Medicine and Society, 21*(3), 55-56.