The Tutorial Process in Problem Based Learning and Its Related Factors: A Qualitative Study

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Background: The tutorial is the core element of Problem Based Learning (PBL) and is influenced by several factors. Faculty of Medicine, Universitas Indonesia had implemented an integrated curriculum with PBL as the main learning approaches. This study was conducted to explore the tutorial process and factors that may play a role on it. Methods: The study is a qualitative (exploration) study. Three groups of students representing 1st, 2nd and 3rd year students were chosen randomly. Four tutorial sessions for each academic year were observed using videotape-recorder and a structured checklist. Data were then transcribed, the theme was categorized, analyzed and interpreted qualitatively. Additional data on facilitator performance (assessed by the students) was collected from the facilitator coordinator. Results: The facilitators, students and problems or triggers were the major categories identified. Collaborative, constructive, contextual and self-directed learning were observed during the tutorial process. The tutorial process motivated students to activate prior knowledge and to think critically. Students achieved good clinical reasoning skills and explored community-based knowledge. Although all groups explored sufficient basic knowledge, some students tended to explore clinical sciences more. It is probably due to the characteristics of the problems and facilitators. Facilitators’ performance based on the observation was not completely concurrence with their performance assessed by the students. Conclusion: Despite a number of issues aroused during the tutorial process, basically the tutorial process run well. In addition to three major categories that influenced the tutorial process as mentioned by other researchers, learning resources also played an important role in the tutorial process. The quality of the problems should be improved so that students are still eager to explore more basic knowledge. Faculty development concerning the role of facilitator in PBL tutorial need to be prioritized. Furthermore, the revision of facilitators’ performance assessment tool is a must.

Key words: problem-based learning, tutorial process


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INTRODUCTION

The new paradigms in medical education emphasize constructive, collaborative, contextual and self-directed learning (the three C’s and one S). These aspects are covered by the problem-based learning (PBL) approach. Problem-based learning is a learning approach in which problems are presented at the beginning of the learning process. The problem is used as a trigger to increase the students’ capabilities in problem solving and clinical reasoning skills. It is also aimed at encouraging students to explore new information to understand the underlying mechanism of a problem. In PBL, students work together in small groups, focused on student-centred learning.

The tutorial process is the core element of PBL. There are three major components of the tutorial process: problems, facilitators and students. The tutorial process depends on the quality and type of problems. It is also influenced by how the facilitator leads the tutorial process. Facilitators and students play an important role in the group’s functions. Unfortunately, those three components are often found to be an issue in the PBL tutorial process. If the problem is too structured, it will not motivate students to learn. Furthermore, facilitators who facilitate discussions in a too directive way sometimes disturb group dynamics. Finally, poor group discussions due to the quality of students’ input can also become a problem in the tutorial process. Students’ characteristics and their attitudes in relation to PBL are assumed to be factors influencing the success of PBL.

There are several learning theories underlying questions of why and how the PBL tutorial process works. Adult learning theory, constructivism and cognitive information processing theory are often mentioned as the basic theories of PBL. There are many more theories that may be related to PBL. Nevertheless, no single theory can explain the numerous aspects of PBL.

Since PBL had developed, many Asian higher education institutions adopted this approach which originated from western countries. Factors such as local cultures may influence the implementation of PBL in Asia. Furthermore, it will impact the learning outcomes as well. Study conducted in higher education institutions in Malaysia, Indonesia and the Philippines found that they applied various approaches to implement PBL. However, students and facilitators thought positively over PBL and aware the obstacles they faced. Students observed problems in group work where their peers were not contributing or participating as expected. In contrast, this study found something missing in the students’ intellectual development. The tutorial groups only sharing information without developing critical thinking. The presence of facilitators in the group discussions hampered their freedom in gaining higher order thinking skills. This condition could be due to the cultural impact on learning process. Considering this situation we have conducted a study aiming to understand the tutorial process and factors influencing the tutorial process in our institution.

METHODS

This study is a qualitative study (exploration study) so that we can obtain a real picture of what is going on during tutorial process and what elements that play role in tutorial process.

The Faculty of Medicine, Universitas Indonesia (FMUI) has made use of PBL since 1995, but its current implementation dates from 2005 when PBL was selected as the main learning approach. A PBL tutorial is held only in the pre-
clinical years (1st, 2nd and 3rd years), twice a week; two hours for the first session (generating learning issues) and three hours for the second session (sharing and pooling knowledge). The PBL sessions use Branda’s twelve discussion steps. The faculty select these steps since its lead the students’ tutorial process step by step in ways that students think systematically and comprehensively.

Each group of 9-10 students is led by one facilitator. One student is appointed as a chairman, and another one as a scribe. The scribe summarizes each session and passes a report on the tutorial process results to the facilitator to be reviewed and signed. During the tutorial process, the facilitator assesses the students’ performance using an evaluation form. On the other hand, students also assess the facilitator’s performance via electronic access. Facilitators either have a medical or biomedical sciences background. Facilitators are designated as eligible after completing the PBL facilitators’ training for 5 days held by the university or faculty.

The study population was made up of all the PBL tutorial groups of the 1st, 2nd and 3rd year students enrolled in FMUI, in the academic year 2010-2011. Three groups of students representing the 1st, 2nd and 3rd year students were selected randomly. Students were grouped on the basis of Grade Point Average (GPA) and distributed evenly to each group discussion, so that each group consists of homogenous students’ performance. Observations were made using video-tape recorder of four tutorial sessions for each academic year. We also used a checklist (yes/no) which is a modified list of the facilitators’ tasks in each step of the discussion process. In addition, positive and negative aspects were noted during discussion. The observers were staff with a medical education background and were certified facilitators. Thereafter, the data were transcribed, coded and analyzed according to the emerging themes. Other supporting documents such as discussion evaluation sheets and students’ guide books were explored to triangulate the data. The discussion process was evaluated in term of students’ activity, disciplines, argumentation, communication, domination, and sharing knowledge. In addition, we collect facilitators’ performance data from the facilitator coordinator.

RESULTS

Similar to the previous reference, three major categories were identified during the study: facilitators, students and problems. The tutorial process consisted of categories such as discussion processes, steps, terminology, obstacles and relation to the triggers; while facilitators’ categories consisted of positive and negative roles and positive and negative characteristics. Students’ categories identified were the roles of the chairman, scribe and members; positive and negative aspects. Finally, problem or trigger categories consisted of the quality and relation to other triggers.

Students were enthusiastic during these discussions, especially the first year students encountering a new challenging experience with the new learning strategy; they discussed the case with enthusiasm. Other students mentioned that they did not much like the PBL tutorial, which may be due to too many triggers presented (4 triggers, within 6 weeks), so that students had more assignments to be completed. Some students did not take notes at the second session when every group member shared their knowledge; some of them did not pay attention to what their peers shared.

At the first session, students activated their prior knowledge to determine learning issues. But they often did not directly answer the questions
using their prior knowledge. Right before the first session ended, each student was given a task according to the learning issues identified. After having time (self-study time) for exploring learning resources, students worked together again in the second session. Some steps were missing during discussions: these were the identification of what was already known (5th step), identification of appropriate learning resources (6th step), and repetition of all or some of the previous steps as necessary (9th step) and testing the understanding of the knowledge by its application to another problem (12th step).

Students shared their knowledge and constructed new information, building new knowledge. They worked collaboratively and complemented each other. We also found interdependency during the tutorial process. Most students discussed actively and showed a good group dynamic, and the tutorial process functioned well. Only one or two students showed passive participation. The discussion motivated students to think critically and integrated knowledge from multidiscipline aspects. Most students respected others’ opinions; they shared their argumentation and learned how to communicate with other members of the group and the facilitator. However, we found negative aspects such as: some students did not come on time, some became confused during discussion, others wanted to finish the discussion as soon as possible and some were not able to make a summary of the knowledge obtained.

From the observations, we can conclude that the role of the students as chairmen progressed through the levels of education. The chairman of the first year students looked unfamiliar in leading the discussion process. Therefore, the facilitator often took over her duty. In contrast, the second and third year chairmen were more capable, so that the facilitator let them lead the discussion without too much intervention. The role of the student as a scribe was found mainly in the first session. At the second session, the scribe only took notes after the group had summarized the results of the discussion. Some students did not take notes at the second session, while other students seemed eager taking photographs of the discussion notes written on the chart using their mobile phones.

Students showed good clinical reasoning skills and also discussed community health aspects, except the first year students who faced difficulties in summarizing the discussion results in a comprehensive way. Fortunately, the facilitator who assisted the first year students was an expert in medical education. Therefore, he could assist the group in the right direction, though sometimes he gave the information directly, made frequent interventions and was impatient. The facilitator of the second year students had no medical background, and he was too passive. He neither gave feedback to the students, nor directed the tutorial process. He kept quiet, while some students talked between themselves (in pairs) and did not pay attention to other students. The third year facilitator showed a great concern in directing the group, but sometimes she insisted the students to come up with the learning issues listed in the facilitators’ guide book precisely. All facilitators showed a great effort to direct students in achieving the predetermined learning objectives. Nevertheless, we found that only 50% of the learning objectives were achieved. Data from the facilitator coordinator showed that all facilitator assigned to facilitate the selected groups had a good evaluation score (more than 4 out of max 6, ranging from 4.22-5.34).

Some problems encountered included learning resources, schedule, internet access, discussion rooms, and the quality of the triggers. Students
Students learned basic sciences in depth, but some students tended to learn more on clinical sciences. They learned how to diagnose and manage patients (problem-solving, disease-oriented); sometimes they discussed clinical aspects in detail, which was not yet necessary for their level of education.

A concept for the PBL tutorial process was developed based on the observation of the PBL tutorial process (figure 1).

**DISCUSSION**

Three elements were found to be the major elements in tutorial process those were the facilitators, the students, and the triggers. Issues mainly came from these elements too. In addition, learning resources also played an important role in the success of PBL.

During the tutorial process, we observed collaborative, constructive, contextual and self-directed learning at all levels of education. This was in line with the new paradigm in medical education.\[1\] Students learn and work together (collaborative learning), analyze and synthesize new knowledge (constructive), relate knowledge obtained from the problem with real situations in future professional life (contextual learning) and organize their own learning (self-directed learning). Learning theories that supported the tutorial process under study were information processing theories, experiential learning (cognitive learning theory), learning by experience (learning by doing) and theory related to students’ prior knowledge. By using PBL, students can retain their knowledge; understand, process, reflect and relate the information gathered.\[13,14\] Our observation did not find any cultural impact during tutorial process, students was able to develop critical thinking and construct new knowledge.

Some students participated actively, while one or two were passive participants. According to Bollela et al. (2009), there are students who are not talkative, so they face difficulties in expressing to others what they really know.\[15\] Other study concluded that the silence in PBL tutorial process was due to students’ construction, negotiation and re-construction of their multiple identities.\[16\] In general, students were able to explain and share knowledge, but some students read the assignment without really understanding the content. This situation led to the loss of interest of some students (they got bored). We also found that some of the students showed enthusiasm, while others discussed in pairs and preferred to end the discussion early. This might be due to failings in the facilitator’s role and characteristics.

Based on our observation, one of the facilitator was not a medical doctor and was not performed well. This facilitator obtained the lowest score compare to the other two facilitators, even though the score was categorized as good. Instead, facilitator who has a medical education background achieved the highest score. This condition supported by other study stated that an effective tutor is one who is an expert in the subject matter\[17,18\] and also has skill in facilitating
Moreover, facilitators should be able to communicate their knowledge so the student can understand the knowledge; able to identify appropriate time to intervene and how to intervene. One can not be a good facilitator right away, it needs time to achieve it, and faculty development is one way to support them until the time come when they realize their role to facilitate the students’ learning process rather than teaching them. In relation to the score obtained, it implies that the assessment tool of facilitators’ performance may not really describe the actual facilitators’ performance, since the low performance facilitator gained a good score. Therefore, it should be
revised accordingly by re-evaluating the scoring items and categorization.

Facilitators were not sure whether students were able to achieve all the learning objectives. Therefore, sometimes they broke the rules by presenting all the data to the students without trying to probe students with open-ended questions. In fact, by comparing the discussion results and learning issues listed in the guide book, only 50% of the learning objectives were covered. The role and characteristics of the facilitators under study varied. Facilitators and students sometimes used different terminologies for the discussion steps. They modified Branda’s steps and missed some steps. This might also lead to below optimal achievement.

The students tended to explore the clinical sciences more. Some reasons that might cause this situation were as follows:

1. Facilitators and students lacked knowledge about PBL.
   They assumed that PBL is problem solving. To implement PBL successfully, the understanding of PBL, especially the basic concepts of PBL, is the first element that should be delivered both to staff and students.\(^{[19]}\)

2. The poor quality of the problem construction.
   In our institution, the complexity of the triggers was developed gradually from week to week at the same module and also year to year as the students’ academic year progress.
   We found that the second trigger was mostly a pathological condition that led students to discuss diseases (disease-oriented) rather than the mechanisms. A good trigger should relate to students’ prior knowledge, but consist of aspects that have not yet been faced so that students have a chance to explore it. It should also be relevant, motivate learning, be interesting and in line with the learning objectives. In addition, the quality of the triggers relies on the type and format of the triggers.\(^{[5]}\) Most of the triggers in the modules observed consisted of an explanation problem and a strategy problem which delivered as written scenarios (paper-based). Explanation problems were supposed to be given to the 1\(^{st}\) and 2\(^{nd}\) year students, while strategy problems should be given to the 3\(^{rd}\) and 4\(^{th}\) year students.\(^{[5]}\) Our findings showed that the strategy problem was already given to the 2\(^{nd}\) year students, which was maybe too early. To avoid student boredom this format could be modified to be more interesting.\(^{[5]}\)

3. Clinical sciences may be more interesting than basic sciences.
   Students are eager to improve their knowledge on clinical sciences, since its application for their future profession is more interesting for them.

Finally, in addition to the three major elements of discussion, learning resources also played an important role in achieving the success of PBL.

**STUDY LIMITATIONS**

Since this is a qualitative study, it is difficult to avoid subjectivity. Fortunately, observation in each tutorial group was not carried out by the same observer, but also observed by other observers at different sessions. This study only observed one tutorial group at each educational level, even though, each group was observed over four sessions. Therefore, this result cannot be generalized to other groups, which requires further research involving a larger number of tutorial group observations.
CONCLUSION

There were three important elements identified in our study: the facilitator, student and problem or trigger. The resources for the problems also originated from these elements. Moreover, learning resources also influenced the tutorial process. The tutorial process runs well although some steps were missing. Triggers’ construction and some other factors contributed to the tendency of some students to be more interested in discussing clinical sciences. The roles and characteristics of the facilitators seemed to be influenced by these conditions and might also lead to a below optimal outcome as only 50% of the learning objectives were achieved. The students achieved clinical reasoning skills and improved their community health knowledge during discussions. Based on this study, we propose the faculty to prioritize the improvement of PBL facilitators’ training in order to strengthen facilitators’ competencies and the revision of facilitators’ performances assessment tool. Furthermore, innovative strategies should be implemented to improve the trigger quality, students’ performance, the tutorial process and learning resources.

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