Problem based & traditional based learners: attitudes from students and doctors towards basic sciences in medical education

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Background: Whilst there is general consensus about the positive effect of Problem-based learning (PBL) on skills and application of knowledge, there is little consensus as to whether PBL students are significantly lacking in basic sciences knowledge compared to traditional counterparts. Heterogeneity between studies makes it difficult to determine an absolute answer to the question.

Summary of Work: Nine Likert-scale statements assessing attitudes towards basic sciences were distributed to students (survey monkey) and doctors (manually). Four questions were added to determine demographic. Responses were divided into “PBL” and “Traditional” cohorts. The Mann-Whitney U test was used for statistical analysis.

Summary of Results: Responses to statements (S) 6&7 were analysed for the poster. Differences between the cohorts were not found to be statistically significant for S6 but were found to be for S7.

Discussion and Conclusions: S6&7 favour traditional and PBL courses respectively. 15.8% of traditional medics (n=3) agreed with S6 versus 29.3% PBL (n=12) (z<1.96; p>0.05). 82.9% PBL medics (n=33) agreed with S7 versus 57.9% of traditional medics (n=11) (z>1.96; p<0.05).

Small cohort sizes and disparity of numbers; PBL (n=41), traditional (n=19), are limitations of this study. Qualitatively assessing opinions of clinical medical students and doctors with a larger and more equally distributed cohort could prove useful in detecting whether or not there is a need to form a new curriculum from these two curricula.

Take-home messages: Responses from PBL and traditional medics suggest they would favour a hybridised course, composed from aspects of each curriculum.

Deliberations on the demise of a whole-system design for integrating medical students’ active learning: Postscript to a follow-up study of inaugural tutors

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Background: Six months after the 1996 launch of Liverpool problem-based medical curriculum, all 34 inaugural (first-semester) problem-based learning (PBL) tutors remained positive albeit cautious about their role (interviewed by the 35th tutor; T1 study). In 16-year follow-up interviews (T2 study), the ten still there as active educators with that curriculum reflected on the experience. The announcement of the end of the integrated, problem-based educational philosophy came one month after the last T2 interview. Eighteen months later, despite four retirements, all participants had still contributed to the current ‘2014 programme’, which focused more on basic science content than on educational process. It appeared timely to clarify critical aspects of the T2 study-responses about the problem-based system, given its subsequent discontinuation.

Summary of Work: Aim—How do long-serving educators previously immersed in sustaining an ‘active learning’ system conceptualize its discontinuation?

Setting: Liverpool MBChB curriculum. Participants: The ten inaugural PBL tutors who had remained active with the curriculum by 16.5-year post-launch follow-up.

Method: ► The eleventh remaining tutor corresponded briefly with the ten participants for a postscript clarification (T2+) of their T2 responses about the ‘system’. ► Inductive analysis (within the pragmatism paradigm) for themes.

Summary of Results: Perceived reasons and reactions to the demise of the curriculum emerge (e.g. clarification about conflict in expectations, priorities, and hidden curriculum).

Discussion and Conclusions: Long-serving tutors in an integrated ‘active learning system’ give critical insights about flaws to anticipate in sustaining its educational integrity.

Take-home messages: Long-serving educators are potentially a mindful resource for deliberations about implicit organizational and cultural challenges to the educational integrity of such a system.
Problem-Based Learning System: A Chance for Research Education

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Background: Problem Based Learning (PBL) is one of the uprising approaches to transform education from a passive to an active process. PBL plays a role not only in developing scientific curiosity, but also in bracing students to become professionals capable of playing multiple roles in practice. The aim of this paper is to use PBL to integrate skills that will be beneficial in research outcome.

Summary of Work: Phase 1 includes an extensive review through different databases including: Pubmed, ScienceDirect, and EBSCO; about PBL and delivering research competencies. Phase 2 aims to find a new model to integrate research competencies into PBL through brainstorming sessions with students, educators, and PBL facilitators. Phase 3 includes implementing this model into medical curricula and observing the outcome.

Summary of Results: PBL, by its unique design, fosters many skills and competencies; hence can be used as an opportunity to integrate more research specific skills. Our study results suggest that PBL design should emphasise on areas needing further research; students could be asked to formulate PICO questions, use up-to date sources and original articles, and write mini-proposals as extra activity. Finally, simplified concepts could be infused into each PBL session, progressing in complexity parallel to the PBL sessions and current phase.

Discussion and Conclusions: Curriculum developers can invest in PBL, being a well followed model, and enhance it to become more research oriented. This will help equip students with diverse skills including research competencies.

Take-home messages: The aim of PBL should not be limited to increasing students’ knowledge, but also to create better physicians in terms of general skills and competencies.

Problem-based learning, Experience of implementing in Astana Medical University

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Background: Problem-based learning (PBL) develops clinical thinking and stimulate students to acquire knowledge through self-searching and analysis of the medical information. Students takes a more active role in trying to solve a practical problem. This becomes especially important at the present time due to the transition of the educational process in the credit system.

Summary of Work: PBL technique has been tested in 4 groups of 1-2 courses students. After the PBL tutorium students completed anonymous feedback questionnaires in which they reflect their attitude to studies by the method of PBL. Scores are calculated on a point system, where 5 - strongly agree, 4 - agree, 3 - hard to say, 2 - disagree, 1 - completely disagree.

Summary of Results: Analysis of the questionnaires showed that 96.9% students liked conducting classes using the new method, 3.1% filled in the column "Hard to tell." According to all students (100%), PBL is a useful technique for more efficient assimilation of the subject. 67.9% liked the approach and style of work of tutors. 100% students liked to independently formulate questions for further study. 93.8% liked how our tutors are encouraged to discuss between all members of the group, guided group.

Discussion and Conclusions: PBL develops the student skills such as team work, improving leadership skills, ability to listen and participate actively in the discussion, collaboration and cooperation, respect for the views of colleagues, the ability to analyze and critically evaluate literature, focused study and use of resources, mastery of presentation skills.

Take-home messages: Interdisciplinary approach in PBL becomes very relevant because students can see the close relationship between the basic sciences, as well as to understand their practical value in clinical practice.
Combined Simulation with Problem-Based Learning - ‘SIM-PL’ - for Teaching Undergraduate Medicine

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Background: Simulation combined with Problem-Based Learning (PBL) - ‘SIM-PL’ has been successfully pioneered by our unit for teaching surgical topics to medical students. We now investigate whether this modality would also be effective for teaching management of acute medical conditions.

Summary of Work: ‘SIM-PL’ presents students with a clinical problem to work through and research, as in traditional PBL, but prior to discussion of the learning objectives, SIM-PL also involves the students engaging in a simulation of the problem without the tutor being present, although a senior can be consulted by telephone at any time.

Immediately after the session students have the opportunity to reflect on their practice and discuss concerns openly with colleagues and tutors to maximize their learning experience. Fifteen 3rd year medical students participated in two ‘SIM-PL’ sessions centred on diabetic ketoacidosis, chest pain or sepsis.

Following each session students anonymously completed written feedback questionnaires employing a Likert scale.

Summary of Results: All 15 students either “strongly agreed” or “agreed” that SIM-PL improved their confidence in the assessment, diagnosis and management of the medical topics. All students recommended ‘SIM-PL’ should be formally incorporated into the undergraduate curriculum.

Discussion and Conclusions: Generally speaking, the current PBL course is well designed. Further evaluation for fourth grade PBL course to find the transition from grade three to grade four may get more information.

Take-home messages: 1. The frequency of reading textbooks dropped off after entering the course. 2. The cooperative atmosphere among classmates was recognized as the most important factor affecting the PBL process. 3. Organization and integration of information were abilities that students hoped to acquire from the course. 4. Time consuming was the main reason that students dislike PBL.
Discussion and Conclusions:
Scores.

Significantly related to the internship performance scores in the first to third years of school but were significantly correlated with the written examination related. The OSCE evaluation scores were not associated with the Rubrics scores of PBL course scores of OSCE on SP stations were significantly clinical learning abilities. The results indicated that the study believed that the OSCE enhanced their PBL and OSCE course. The majority of students in the future clinical practice.

Take-home messages:

Student performance in the course of clinical practice. The results indicated that it can effectively improve skills and self-directed learning in the school. The students are encouraged to effective problem solving and decision making for the purpose of addressing and treating patients’ dental needs as well as promoting their health and wellness.

Take-home messages:

A style of active learning is facilitated collaborative processes. Before they engage in PBL tutorials in order to

Summary of Results:

The students were satisfied with the PBL and OSCE course. The majority of students in this study believed that the OSCE enhanced their clinical learning abilities. The results indicated that the scores of OSCE on SP stations were significantly associated with the Rubrics scores of PBL course related. The OSCE evaluation scores were not significantly correlated with the written examination scores in the first to third years of school but were significantly related to the internship performance scores.

Discussion and Conclusions:

In the PBL curriculum, students are encouraged to effective problem solving skills and self-directed learning in the school. The results indicated that it can effectively improve student performance in the course of clinical practice.

Take-home messages:

A style of active learning is important to oral hygiene students’ attitude towards future clinical practice.

#4GG07 (26840)
The outcomes of PBL curriculum and OSCE on oral hygiene students: a pilot study in Kaohsiung Medical University

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Background: Dental treatment and care are performed by a team which includes dentists and oral hygienists. Oral hygienists must be competent in cognitive behaviors including assessment, analysis, problem-solving, and decision making for the purpose of addressing and treating patients’ dental needs as well as promoting their health and wellness. Therefore, we implemented a PBL curriculum and OSCE on oral hygiene students to achieve a result-oriented learning. The pilot study was to investigate the learning outcomes.

Summary of Work: Twenty-nine 3rd-year oral hygiene students participated in the PBL curriculum of oral-maxillofacial surgery and students’ performance was evaluated by Rubrics. After the PBL curriculum, we implemented an OSCE to examine the learning results. The six OSCE stations consisted of two patient communication and four clinical skill scenarios. After the test, the students recorded their opinions on feedback forms. The compiled written examination scores from the first to third years of the courses were also analyzed. A Pearson correlation coefficient was used to compute the relation between these scores.

Summary of Results: The students were satisfied with the PBL and OSCE course. The majority of students in this study believed that the OSCE enhanced their clinical learning abilities. The results indicated that the scores of OSCE on SP stations were significantly associated with the Rubrics scores of PBL course related. The OSCE evaluation scores were not significantly correlated with the written examination scores in the first to third years of school but were significantly related to the internship performance scores.

Discussion and Conclusions: In the PBL curriculum, students are encouraged to effective problem solving skills and self-directed learning in the school. The results indicated that it can effectively improve student performance in the course of clinical practice.

Take-home messages: A style of active learning is important to oral hygiene students’ attitude towards future clinical practice.

#4GG08 (26027)
The effects of personality traits on students’ performance in problem-based learning tutorials

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Background: In problem-based learning (PBL), peer-assessment is often used to facilitate students’ collaborative learning processes. However, there is a lack of research on exploring factors affecting students’ performance in PBL tutorials. This study examined how different personality traits (temperaments) could influence individual students’ performance in a PBL environment.

Summary of Work: Year 2 students (N=80) in a medical school in South Korea completed a Korean version of the Temperament and Character Inventory (TCI) in the first week of a year-long PBL sessions. At the end of each unit, students evaluated their peer students based on their participation, completion of self-study, communication, and contribution. Multiple regression analyses were conducted to examine how four temperaments (novelty seeking, harm avoidance, reward dependence, persistence) were associated with peer-assessment scores.

Summary of Results: Correlational analyses indicated that students’ participation was negatively related to harm avoidance (r = -.248, p <.05) and positively to persistence (r = .290, p <.01) whereas students’ self-study completion was negatively related to reward dependence (r = -.351, p <.01). In the regression analysis predicting students’ participation, none of the four temperaments was a significant predictor. When predicting students’ self-study completion, reward dependence (β = -.259, p <.05) remained a significant predictor.

Discussion and Conclusions: Temperaments, in particular reward dependence, had an effect on student performance in PBL tutorials.

Take-home messages: Faculty members may consider advising students who are high in reward dependence before they engage in PBL tutorials in order to facilitate collaborative processes.
Understanding the principles of problem-based learning (PBL) for instructors at Faculty of Medicine, Thammasat University

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Background: Faculty of Medicine at Thammasat University has implemented the problem-based learning (PBL) curriculum since 1992. All new tutors must enroll in a PBL-training course before conducting the actual PBL group. However, the correct knowledge of tutors about the PBL concepts, which may have an effect on the learning outcome, has never been assessed.

Summary of Work: This study aims to assess the knowledge about PBL of tutors that involved in PBL at the Faculty of Medicine at Thammasat University. The questionnaires using true-false answers and open-ended questions about PBL were distributed to all tutors at the Department of Pre-clinical Sciences at the Faculty of Medicine, Thammasat University. Descriptive analysis was used to interpret the results. Differences were tested for statistical significance using chi-square test.

Summary of Results: The overall response rate was 87.5% (49/54). The data showed that 83.67% of tutors had correct knowledge of the PBL concepts while 16.3% of tutors missed some concept of PBL. There was no statistical difference in the PBL knowledge between tutors with experience under 5 years and tutors who had more than 5-year experience (P>0.05).

Discussion and Conclusions: The majority of tutors in the Department of Pre-clinical Sciences, Faculty of Medicine, Thammasat University had correct knowledge of the PBL concepts. However, there was some misconception especially the role of tutors during the PBL session occurring in tutors with both below and more than 5 years of experiences. To achieve the utmost benefit of PBL for teaching medical students, all tutors should be trained regularly to refresh and to update their knowledge about PBL and the group-facilitation skill. This should be added up from the training when they first received.

Take-home messages: Tutors should be trained regularly to refresh and to update their knowledge about PBL and the group-facilitation skill.
Problem-Based Learning, Student engagement: the role to improve hospital management

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Background: Medical students themselves are not directly involved in hospital system management which is a necessary skill for professionals when they graduate and work in community hospitals. To make them familiar with the management skills, we have set the hospital problem-based learning activities in community hospitals for 6th year medical students. We hypothesized that the hospital systems management can be improved through the students’ management proposals.

Summary of Work: During a 4-week of community medicine rotation, 69 medical students were divided into 18 groups and attended at affiliated community hospitals. Each group was assigned to study hospital systems and ascertain the problems. The students were encouraged to apply the Fishbone Diagrams and Action Priority Matrix to determine elements causing problems and create problem-solving proposals. The proposals were presented to the hospital executives. The acceptance and utilization of the proposals by hospital executives were evaluated.

Summary of Results: Medical students identified 18 hospital problems which were classified into clinical practice management, medication safety, health care delivery, risk management and community involvement issues. Twelve proposals (66.7%) were accepted by hospital executives and intervened to solve the hospital problems.

Discussion and conclusions: Hospital management projects proposed by medical students as a part of problem-based learning in community hospital have a role to improve the hospitals’ systems. Take-home messages: Problem-based Learning should be encouraged as well as the student engagement in improving hospital system management.

Integrated Theory and Practice in Novel Tutor Training

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Background: The tutors’ role is important for the success of the tutorial process in small group Problem-based Learning (PBL), as well as the theoretical and practical comprehension of the methodology. Because of this, a training programme was conducted for novice tutors as part of a course. The aim of this study was to identify the perception of tutors and students regarding the training programme.

Summary of Work: The training programme involved 24 tutors (volunteer invitation with consent). After the tutorials, the tutors attended 16 microteaching sessions of 30 minutes each, structured into five units: PBL, small group work, tutors role, case design and evaluation. A descriptive study and content analysis was carried out to evaluate the perception of tutors and students regarding this training programme. Tutors evaluated the programme by opinion surveys. Students evaluated tutors performance using a questionnaire (23 items), which were applied at the middle and end of the course.

Summary of Results: Regarding the opinion of the participants of the programme (i.e. tutors), the most relevant aspects are: to share experiences with other tutors, the methodology used, relationship between theory and practice, and the quality of learning. Among their suggestions, schedule problems were identified as important. On the other hand, the students’ evaluation revealed that the strengths of tutors were: commitment, willingness to create an atmosphere of trust and respect, and methodological domain. The weakest areas were delays in the delivery of the assessments and communication skills

Discussion and Conclusions: From the perspective of tutors, the integration of theory and practice was valued. Also, tutors appreciated the opportunity to share their experience with other tutors, enriching the formation of the educational community.
Romanian first-year students’ training experience of problem-based learning

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**Background**: The problem–based learning (PBL) was recently introduced in few Romanian medical schools. Yet, there are no studies regarding the perspective of students and facilitators on PBL curriculum in Romania as a learning process.

**Summary of work**: PBL was introduced in our University as a mandatory module (1 ETCS) in the 1st year curriculum for all three lines of study (Romanian, English and French). 6 clinical cases designed by the academic staff (66 facilitators specifically trained) are discussed during the allocated 28 hours. For each case the group of students identify the unknown or less clear aspects of the given clinical situation. After a self-study period the students’ group meets again and apply the new acquired knowledge to solve the clinical problem. At the end of all the PBL sessions, students and facilitators filled a questionnaire form that sought opinions on rating of PBL model as a tool in understanding concepts’ compared with regular teaching sessions.

**Summary of results**: Students indicated a strong preference for PBL method. A new asset was the possibility to work with small groups of 8 students, although the 1st year students group usually consists of 13-14 students in other modules. Overall, female students responded more positively towards PBL than male students.

**Conclusions**: A direct effect was the active involvement of students in self-directed learning compared to the traditional method. Given the evolving medical education in the Romania medical schools toward problem-based learning it is suggested that self-directed learning and life-long skills should be emphasized to prepare students for practice in the new millennium.