Effect of debriefing guide on student perceptions of tutor performance in problem-based learning.

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Authors: Adel I.Ahmaida Al-tawaty[1], Abdalla M. El-Mansoury[2], Nuha A. El-Naas[2]

[1]Medical Education Unit, Libyan International Medical University (LIMU), Benghazi, Libya.

[2] Faculty of Basic Medical Sciences, LIMU.

Correspondence:

Adel I.Ahmaida. Al-Tawaty.

House No. 297, Syria Street, Benghazi, Libya

Tel: 00218-913820823, Fax: 00218-612233910

E-mail: adelahmaida7@Gmail.com

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Abstract

Background: Content non-expert PBL tutors face difficulty helping students determine the extent and depth of study they should carry out.

Objectives: This study was conducted to investigate student perceptions of tutor performance following use of content non-expert tutors of debriefing guides.

Methods: This study used a cross sectional design. A self-administered 15-item questionnaire with a Cronbach's alpha reliability of 0.81 was used. One hundred and three 2nd and 3rd year medical students at Faculty of Basic Medical Sciences at Libyan International Medical University, Benghazi, Libya were asked to assess their tutors' performance using this questionnaire. A 5 point Likert scale was used for rating. The data were analyzed using descriptive measures and one-way analysis of variance (ANOVA).

Results: The mean score for the 15 items on the questionnaire was 3.79 (SD ± 0.5) and ranged from 3.56 to 4.25. There were no statistically significant differences between males and females (p= 0.478) or between 2nd and 3rd year students (p= 0.272). **Conclusions:** This study shows that students as a group believe that the use of the debriefing guide has a positive effect on tutor performance. The debriefing guide might help in bridging the knowledge gap of content non-experts and reduce the variation in student learning among individual students and groups.

Introduction

Problem-based learning (PBL) was described as focused experiential learning organized around the investigation and resolution of messy real world problems (Torp & Sage 2002) and (Savery, 2006). Basically, students in problem-based learning are challenged with a problem to discuss in small groups under the guidance of a tutor. During this discussion, one of the students takes the role of the chairperson and other acts as a scribe. By the end of their discussion, they come up with a number of learning issues they need to understand and tackle the problem in a process of self-directed learning (Schmidt, 1983). After a variable period of free study, students meet again to present the knowledge, principles and concepts they gathered in relation to the problem and their learning issues. During this study period, students have the option to consult and search various educational resources.

The activity in PBL was directed to develop skills such as thinking critically, analyzing and solving complex real life problems, and use appropriate resources (Duch et al, 2001). Central to the task of the tutors is the facilitation of student learning rather than direct teaching (Barrows & Tamblyn 1980). Tutor's interventions must encourage students' autonomy (Torp & Sage 2002; Schmidt, 1983) and help bring up favourable behavioural and psychological characteristics of students (Schmidt, 1983; Townsend, 2001; Barrows, 1988).

Tutors in problem-based learning (PBL) have a complex role to play in facilitating students' learning. This includes providing support for students' acquisition of content knowledge and skills in critical thinking, coaching of group processes and modeling of reflective practice .The characteristics of tutors have been a common subject of discussion in PBL-related research (Papinczak et al., 2009; Dolmans et al, 1996) . Although content expert tutors are more likely to use their content knowledge to direct discussions, content non-experts rely more on their facilitation capabilities (Dolmans et al, 2002). Self and peer assessments at the end of each problem and at the end of each block is of major importance in the PBL process (Barrows & Tamblyn 1980).

Problem-based learning (PBL) was introduced as the principal learning strategy at the Libyan International Medical University (LIMU) in the year 2009. Medical faculty students are taught at a basic Medical Science Faculty (BMS) during their first 3 years of study. PBL curriculum at BMS faculty is composed of blocks; each is centered on a specific theme. Blocks span 6-14 weeks. Lectures are kept to a minimum. Each block is composed of a number of

problems used as a trigger for student study and learning. Other teaching strategies such as laboratory clinical skills and practical run in parallel in harmony with the central theme of the block as far as possible. Students, in groups of around 10, are challenged with a single problem every week. The problem addresses topics consistent with the theme of the block. Students are exposed to a problem in 2-hour brainstorming session. During this session, with the help of a tutor, students discuss the problem and end up with a number of learning issues. Students, then, explore and study these learning issues either individually or in groups. They then meet in a debriefing meeting to present and discuss what they have learned, guided by their learning issues. After the debriefing session, students share in a seminar on the same learning issues in presence of subject experts. During this seminar, they are free to discuss the topics and ask questions to subject experts. During this seminar, students are given the chance to discuss any unclear issues related to all educational activities in the preceding week. Students can contact staff members either face to face or through the Moodle. The later is an open source virtual learning environment.

Tutors at the faculty of BMS are mostly young medical graduates who were taught in a traditional way. However, all of them have been through training courses on how to facilitate PBL sessions and perform assessments. In addition, students are ought to reflect on tutors performance. The scope and more importantly the depth of the study students should do is another dilemma to both students and content non-expert tutors. It was a common feeling among tutors that they need to know more about the problems content before administering them. Although problems taught in the BMS were clinically relevant, the focus was on basic sciences. In order to partially bridge the knowledge gap between content experts and non-experts, we introduced what we call a debriefing guide (DG). This guide was introduced one and half year back to medical students in their first and second years (Now 2nd and 3rd year). The guide contains basic information related to the theme of the problem under discussion. Tutors are ought to go through it before the brainstorming session. The debriefing guide differs from the usual problem guide in that it focuses on the content of the problem rather than how to facilitate the session. The aim of this study was to assess student perceptions of tutor's performance after one and a half year of use of this guide.

Methods

A locally constructed questionnaire was used (See appendix for items). It is composed of 15 statements; 2 of them where phrased in a negative tone. These two negative questions were positioned as the last statements of the questionnaire. Each statement was discussed, evaluated and approved by the three authors. One of the authors is a

medical education specialist and the other two are basic science specialists with excellent practical grasp of the PBL process. All items were reviewed by a group of students before use and changes were made accordingly. The internal consistency of the questionnaire was proven by Cronbach's alpha coefficient of 0.81. Items were rated using a 5-point scale of Likert's type (5 for strongly agree and 1 for strongly disagree). Ethical approval was obtained from the university ethical review board. All tutors agreed to administer the questionnaire to students. All 2nd and 3rd year medical students were asked, in small groups, anonymously and in the absence of their tutors to voluntarily fill in the questionnaire. During administration, each item of the questionnaire was explained to students in order to guarantee readability. This explanation was given by one of the authors. Filling in the questionnaire and returning it back was considered as consent to participate.

Data Analysis

The scores of the negatively phrased questions were transformed to positive scores such that the value 5 on negative side was replaced by a value of 1 and 4 by two and vice versa. Descriptive statistics such as mean, standard deviation, as well as one-way analysis of variance (ANOVA) were used in data analysis. A p value of ≤ 0.05 was considered as significant. All analyses were performed using SPSS software version 18.0 (SPSS, Inc., Chicago, IL, USA).

Results

Ninety nine out of 103 students responded, giving a response rate of 96%. There were 55 males and 41 females with 3 missing gender values. Missing values accounted for 1.6% of responses to all questionnaire items. Forty one were second year and 58 were third year students. The mean score for students' responses to the fifteen statements was 3.79 ± 0.5 with a range of 2.79- 4.25. The most frequently cited score was 4. Highest mean scores were recorded for the statements "I feel that the tutor is more confident during both the brain storming and the debriefing sessions" with a mean of 4.25; "It is preferable to keep using the debriefing guide" with a mean score of 4.18; "I feel that the tutor understands my learning needs more than before" with a mean score of 4.11 and "I think the tutor runs the sessions more efficiently" with a mean score of 4.05. Lowest mean score was recorded for the statement "I think that the use of the debriefing guide interferes with the philosophy of PBL" with a mean score of 2.79.

The mean score for female students in both study years was 3.75 (CI= 3.59-3.90) and for males was 3.82 (CI= 3.68-3.97). There were no statistically significant differences between male and female student perceptions for all 15 statements either collectively (p value = 0.478) or individually. Female students were more likely to agree with the statement "I feel that the tutor understands my learning needs more than before". However, the difference didn't reach statistical significance (P= 0.09). The mean score for 2nd year students was 3.86 (CI= 3.76-3.96) and for 3rd year students was 3.75 (CI= 3.59-3.90). However, there were no statistically significant differences between 2nd and 3rd year student perceptions for all 15 statements either collectively (p value = 0.272) or individually. Second year students were more inclined to agree with the statements "I think that the use of the debriefing guide interferes with the philosophy of PBL" and "I feel that the tutor, nowadays, intervene in the discussion more than it should be" with p values of 0.85 and 0.05 respectively. However, the differences didn't reach statistical significance when compared with the responses of 3rd year students.

Discussion

Tutors characteristics are of major importance in the PBL process. One of the most important characteristics is social congruence. Chng et al (2011) have shown that "social congruence of the tutor was found to have a significant impact on learning in each PBL phase while all of the tutor-related behaviours had a significant impact on student achievement". Our study aimed at investigating the impact of introducing a "debriefing guide" on tutor behaviors from the point of view of students in a PBL setting. It is well known that tutors play important role in facilitating the process of learning (Jung et al., 2005). Tutorial skills are generally of two categories: group dynamics where the tutorial process is concerned with the flow of the discussion and interpersonal interactions; and content discussion which is related to the accuracy of the content, critical thinking training and ability to generate hypothesis (Budé et al. 2009) . This study shows that students, by and large, agree that there is an overall improvement in tutor performance after introducing the DG. The DG was valued positively in four of the statements which gained a mean score of 4 or more (agree or strongly agree). One of these is related to a personal characteristic i.e. self confidence. The second is related to change in tutor behavior i.e. efficiency in running the sessions. The third is related to an aspect of social congruence i.e "I feel that the tutor understands my learning needs more than before". The fourth reflects the overall student opinion regarding the DG where most were in favor of its use. Interestingly, students were not clearly sure of whether the use of the DG interferes with the philosophy of PBL or it led to unnecessary intervention of tutors in the PBL learning process (mean scores were 2.79 and 3.19) respectively. In spite of that, 85% were in favor of using it. Budé et al (2009) reported that use of directive guidance in statistics problem-based learning had a positive effect on the subjective perception of students of the course and tutor functionality, as well as a positive effect on actual student achievement. In this kind of approach, a detailed list of questions was prepared to be used during the braining storming and reporting phases by the tutors. However, the tutors in their study were knowledge experts.

In problem-based learning, the problems are largely centered on clinical scenarios. We can, therefore, expect that clinicians are more likely to be more efficient as tutors than those not clinically qualified. However, results from studies comparing clinicians with non-clinicians i.e. content-experts versus non-content experts are inconclusive

(Davis et al, 1992 & Gilkison, 2003). The notion of content and non-content experts need to be further clarified. Since PBL is based on integration between multiple disciplines, there is no such a content expert who specializes in all those disciplines. In reality, a problem is designed by a group of subject specialists and delivered by either one of them or by non-specialists.

Although our tutors were clinically qualified and trained in the PBL process, they were expressing their need of having an extra aid to help them know the basic science content of the problems. For this reason we considered our tutors as non-content experts, particularly that these tutors were guiding medical students in their early study years where basic science subjects form the major component of the curriculum. Although the directive guidance approach was used for an abstract science (Budé et al , 2009), there is no reason why it shouldn't be useful in social sciences like medicine. Our tutors normally use a tutor guide which highlights general tutoring skills, the objectives of the problem and some prompts. It doesn't contain any detailed questions. Instead, questions of why, how and where type are used to help students learn and keep them on track. The debriefing guide, in contrast, adds the dimension of knowledge to the specialist as well as the non-specialist. We might speculate that the positive subjective valuing by students could be related to the tutors feeling more confident which could have a positive effect on their performance. This could also result in tutors being more enthusiastic. We know from old as well as recent studies that tutor's characteristics, particularly motivation, is of major importance in stimulating student learning (Blumenfeld et al, 1991; Savery et al. 1995; Savery et al.1999; Silén & Uhlin, 2008; Kusurkar et al. 2013).

Gender differences are known in studies using subjective measures and have shown to affect a number of aspects in education and career development (Kruijthof et al., 1992; Das et al., 2002; Bleakley, 2013) .Because our study is subjective, we thought that gender differences might exist. In reality, the study didn't show any statistically significant difference neither for the questionnaire as a whole nor for individual statements. This was an unexpected finding particularly in a culture where the society creates major gender-based cultural differences. A slight hint of this was found in the response to the item "I feel the tutor understand my learning needs more than before" where more females were in favor of this statement. However, the p value didn't reach significance ($p = 0.09$). There were no statistically significant differences between 2nd and 3rd year students. This might be explained by the fact that the students were only a year apart.

A limitation to our study is the lack of assessment of the effect of the DG on student achievement. In addition, the impact of the DG was evaluated subjectively after one and a half year of its implementation. In this study, students relied on their memory in comparing the impact of the guide to their prior experience before using the guide.

Conclusion

In conclusion, use of a debriefing guide is well perceived by students and we think that it might be a useful addition to the regular tutor guide. However, the impact of use of such a guide on actual student achievement needs to be investigated.

Declaration of interest

All authors are share holders in the Libyan International Medical University.

Notes on contributors

Adel I.Ahmaida Al-tawaty. Professor of Pediatrics, and Director of the Medical Education Unit at LIMU.

Abdalla M. El-Mansoury. Associate Professor of Physiology at Faculty of Science – Benghazi University and Dean of Faculty of BMS at LIMU.

Nuha A. El-Naas, Assistant Lecturer of Analytical Chemistry and Vice Dean of BMS at LIMU.

Practice points

- Students like using the debriefing guide.
- The debriefing guide is likely to help tutors running the sessions more effectively.
- The debriefing guide is prepared by subject experts.

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Questionnaire on Student's perception of tutor performance after introduction of use of the debriefing guide

Dear student,

BMS and MEU are planning to promote research in medical education. We appreciate that you are an essential partner. We should be pleased to answer the following questions as per shown scale. It tests your perception regarding the change in the tutors' performance after introducing the debriefing guide.
Please tick only one choice for each item.

N.B. This questionnaire is anonymous.

Male: ☐ Female: ☐

Study Year:

Regarding the debriefing guide:						
No.	Item	1 Strongly Disagree	2 Disagree	3 Don't agree	4 Agree	5 Strongly Agree
1	I feel that the tutor is more confident during both the B.S and D.B sessions.					
2	I think the tutor runs the sessions more efficiently.					
3	I think the tutor is able to manage the time of the sessions more effectively.					
4	The tutor allows me to be more oriented.					
5	I'm less likely to deviate from the main stream of the problem.					
6	I think it makes the tutor more able to answer our enquiries during office hours.					
7	I feel that the tutor understands my learning needs more than before.					
8	I feel that I'm less likely to do unrelated study					
9	I feel that different students in my group reach to more or less the same material in the DB.					
10	It helps the tutor to assess our reports in the debriefing session more effectively.					
11	I get better feedback from the tutor					
12	It is preferable to keep using the debriefing guide.					
13	I think that the use of the debriefing guide					

	interferes with the philosophy of PBL.					
14	I feel that different groups end up more or less with the same material in the DS.					
15	I feel that the tutor, nowadays, intervene in the BS & DB more than it should be .					

Abbreviations:
BS: brainstorming DB: Debriefing