

**Reynolds, F. (2003). Initial experiences of interprofessional problem-based learning: a comparison of male and female students' views. *Journal of Interprofessional Care*, 17 (1), 35-44.**

***Abstract:***

Few studies have considered the contribution of PBL to interprofessional education, and even fewer have examined whether women and men evaluate PBL differently. This paper examines first year occupational therapy and physiotherapy students' evaluations of their initial participation in interprofessional PBL, during a module focusing on communication skills and patient-focused approaches to care. Questionnaire data included attitude ratings and qualitative evaluations of PBL. 133 females and 24 males responded (comprising 83% of the total cohort). Most students were positive that PBL contributed to both personal learning and team-working skills. Both female and male students felt able to express their opinions within the seminar groups and were positive that their understanding of therapists' roles within the multi-disciplinary team had increased. However, women expressed rather more trust in the information provided by other students, confirmed greater enjoyment in taking responsibility for their own learning and had more positive views about working with students from another course. In their qualitative comments, more women made reference to enjoying the social aspects of PBL (such as groupwork, support and collaboration). The gender differences were not substantial but those that were observed support previous researchers' arguments that women are more inclined to be 'connected learners' who value the social aspects of learning contexts. The findings overall suggested that PBL made a positive, well received contribution to learning during an interprofessional module.

**Keywords:** Interprofessional education, problem-based learning, student attitudes, gender

## **Initial experiences of interprofessional problem-based learning (PBL): a comparison of male and female students' views.**

### ***Introduction***

This paper examines first year occupational therapy and physiotherapy students' initial experience of problem-based learning (PBL) during their first term of a three year degree programme at Brunel University, West London. As part of their preparation for working within multi-disciplinary teams in the UK National Health Service, the students participate in an interprofessional module during each year of their course.

Problem-based learning is a form of curriculum that is increasingly popular in medical, nursing and therapy education. It is a form of learning that has been recommended for some years by the World Health Organisation (Kantrowitz, Kaufman, & Mennin, 1987), and its value has also been acknowledged by NHS directives (e.g. NHS 2000). Case-based or patient-focused learning approaches, which have much in common with PBL, have been advocated for maximising the effectiveness of interprofessional education (Miller, Freeman & Ross 2001).

PBL curricula are structured around practical problems (or 'cases') which are presented to students *before* detailed formal teaching on the topic (Barrows & Tamblyn 1980). Students take an active role, working within small groups. They take responsibility for seeking out the information that they perceive as relevant to the case and later share this in the group to achieve a more adequate understanding. It is usual for the group to then apply some aspect of this information to the case study, for example formulating an assessment and/or appropriate intervention. The tutor needs to be active, not in 'telling' or directing the group as an 'expert', but

in facilitating group discussion to the requisite depth. The PBL process at its best is re-iterative, with the student group re-addressing the case or scenario in subsequent sessions. This permits discovery of further issues that need clarifying, a continued literature search and an evolving understanding of the 'problem'.

Each problem/case enables students to learn about *several* aspects of the discipline under study, assisting the development of an integrated web of personal knowledge. PBL is popular in medical and nursing education, because it has been shown to be more effective than traditional teaching for helping students make links between the basic sciences and their clinical work with patients (Barrows & Tamblyn 1980). The collaborative PBL process is often regarded by students and staff as encouraging the development of interpersonal skills, team-working and respect for each others' roles which are now considered vital in modern forms of health and social care (Bernstein, Tipping, Bercovitz & Skinner 1995; Miller et al 2001). Students and staff are usually favourable about the skills acquired during PBL (e.g. Bligh, Lloyd-Jones & Smith 2000; Kaufman & Mann 1996; Hammel, Royeen, Bagatell et al 1999; Stern 1997). Problem-based learning methods have been found to attract applicants to a particular occupational therapy course, with 72% of applicants indicating that this was a 'very' or 'fairly' important reason for choice (Craik, Giassane, Douthwaite & Philp 2001). PBL may particularly suit mature learners (Spencer & Jordan 1999).

Interprofessional courses have been considered as a useful means of breaking down stereotypes about other professionals' roles, enabling, at least in theory, improved teamwork in clinical practice (Carpenter 1995). Students have commented favourably about the learning that can be achieved in interdisciplinary contexts through problem-based methods (Hughes & Lucas 1997).

Lary, Lavigne, Muma, Jones & Hoeft (1997) found that their students, spanning three health professions, almost unanimously considered that PBL had enhanced their knowledge, problem-solving, skills for working in groups, and understanding of each others' roles. Most research into students' attitudes to PBL has been carried out near the end of courses when students have had considerable experience of managing the demands of the learning tasks. In contrast, this study sought to examine how occupational therapy and physiotherapy students evaluated their first experience of PBL in weeks 6-8 of their degree courses, during an interprofessional module.

The data permitted comparison of male and female students' responses. As long ago as 1986, Belenky, Clinchy, Goldberger & Tarule argued "...strategies of teaching and methods of evaluation are rarely examined by faculty to see if they are compatible with women's preferred styles of learning" (p5). These issues continue to remain neglected in educational research, and only one study has been found to date (in searches of ERIC, Medline, CINAHL and PsycINFO), that examined gender-related differences in students' evaluations of PBL. The study reported that women expressed more comfort in single-sex PBL seminar groups (Kaplowitz & Block 1998).

Is there any reason to expect that women and men may bring differing needs and preferences to the learning environment? Hayes & Richardson (1995) carried out quantitative studies to compare the responses of women and men to different university learning contexts and they found few gender differences. Nevertheless, a few qualitative research studies suggest that women and men express somewhat different learning preferences. In particular, women are represented as placing more value on 'connected' learning, in contrast with men who may feel more comfortable with 'separate' learning (Belenky et al 1986; Gawelek, Mulqueen, & Tarule

1994; Gilligan 1982). In connected learning, there is more emphasis on listening to achieve a deep understanding of others' viewpoints rather than to critique or dismiss them. "...Women's sense of integrity appears to be entwined with an ethic of care" (Gilligan 1982 p171). This approach has been traditionally denigrated in male-dominated learning environments, which are inclined to value more authoritative displays of knowledge and erudite critiques of others' findings and arguments. "Instead of attachment, individual achievement rivets the male imagination" (Gilligan 1982, p163). Belenky et al (1986), on the basis of their interviews with students, argue that women are particularly likely to describe adversarial learning environments as inhibiting their confidence and 'voice'. Hipp (1997) provided further support for the notion of connected learning, finding that female distance learners placed particular value on nurturing each others' ideas. Collaborative working has been found effective in advancing intellectual skills among women science students (Lundeberg & Moch 1995).

Women are also represented in the research literature as more likely than men to bring gender-related concerns or anxieties to the learning environment. Mature women's students' experiences of caring for others are often socially denigrated (Belenky 1986; Edwards 1993; Wisker 1996) yet these experiences have immediate relevance, particularly for those studying to work in health and social care. Women students are particularly diverse in age, family responsibilities, and previous work experiences (Edwards 1993; Wisker 1996). Those with family responsibilities often undertake long journeys between their fixed home-base and college. Some experience pressures to return early enough to perform domestic roles. This patchwork of responsibilities may leave very limited time for social contact with other students. Given the value that women appear to place on their personal relationships and life outside education, they have been represented as more likely than men to value learning through practical problems

which allow connections to be made between abstract knowledge and personal experience (Edwards 1993). This style of learning has also received denigration, but need not present a barrier to academic excellence (Wisker 1996). In the working environment, women also seem to express particular enjoyment when encountering ambiguous problems and the search for creative solutions (Colwill & Vinnicombe 1991).

To summarise, the limited available research literature indicates that problem-based learning may provide a positive approach to educating students in interprofessional modules. The literature on male and female learning preferences indicates that women's learning needs are highly compatible with the central principles of PBL, and that women may be slightly more comfortable with this form of learning than men. This study examines these issues.

#### **The PBL task:**

Students on the occupational therapy and physiotherapy courses at Brunel University take an interprofessional module titled 'Communication and Clinical Effectiveness' during the first term. The module focuses on communication skills, patient-focused care, ethics and research that examines the effects of communication in health care settings on patients. As well as lectures, students participate in weekly interprofessional seminars involving a variety of participatory learning activities. The problem-based learning task helps the students to be self-directed in their management of a small project and group. Some of the tutors have wide experience of PBL on other parts of the courses, and others have less.

The problem-based learning took place in weeks 6, 7 and 8 of the Autumn term, and was the

students first exposure to this approach to learning. The learning objectives of the task sequence were described to the students as follows:

- To develop knowledge about psychosocial aspects of chronic pain
- To gain insights into relevant occupational therapy and physiotherapy approaches to assessment and treatment
- To practise communication skills
- To practise and acquire further information search skills
- To gain experience of multidisciplinary team-working.

The learning task involved the students working in small groups of about 4-5 to formulate a multidisciplinary pain management intervention for a hypothetical patient with chronic pain.

Each small group initially selected their case patient from the five that were available. The cases were each described in about 300 words, and the set of five varied in age, gender, ethnicity and other variables. Some formal teaching was provided on the psychology of chronic pain, but this deliberately left students to review much of the literature for themselves, using library and electronic database skills acquired during previous weeks. During week 2 of the 3 week period, the students pooled the information that they had researched and applied it to the specific needs of the case patient. The sequence of study and collaboration culminated in each group presenting their interprofessional pain management programme to the larger seminar class and tutor during the third week. The presentation was not directly and formally assessed, although the knowledge gained during PBL could be used in the essay-based assignment. The presentations were followed by the evaluation questionnaire, and further discussion about the learning process.

***Method:***

The following information was obtained via a questionnaire completed during seminar time

following the pain management presentation:

- Age (18-21, 22-25, 26-30, >31)
- Gender
- Professional course (occupational therapy; physiotherapy)
- PBL attitude ratings (16 statement questionnaire: maximum score 80)
- Qualitative responses to open-ended questions inviting comment about what the student liked and disliked about the PBL experience.

PBL Attitudes Questionnaire (PBLAQ): this was developed during previous research into first year students' evaluations of PBL (Reynolds 1997), and is given in Appendix A. The attitudes are based on previous reviews of students' responses to PBL and encompass both intellectual and social aspects of the learning experience. Each attitude statement is responded to according to a 5-point Likert scale, with Strongly Disagree and Strongly Agree at opposite poles. Some attitudes are negatively worded to reduce response sets. The scoring is reversed on these items, so that high scores indicate positive attitudes.

Sample: 157 (133 women : 24 men ) returned the questionnaires. This represented an 83% response rate from the cohort in attendance, with women and men responding in similar proportions as in the cohort as a whole.

Ethics: all students were informed that completion of the questionnaire was anonymous, voluntary and would not directly benefit them. The students were informed that the findings of the study would be used to improve the PBL experience of future cohorts of students.

### ***Results:***

#### **Quantitative findings:**

The questionnaire ratings showed a reasonable internal consistency (Cronbach's alpha 0.72), so the total score from the PBLAQ was used in some of the analysis. The total PBLAQ scores demonstrated that, as a group, the students were positive about this approach to learning (mean 62.0, SD 5.6, compared with the maximum possible score of 80). Occupational therapy students and physiotherapy students were equally positive about their experience of PBL (mean score OT 62.0; PT 61.9).

There was no significant gender difference between the total PBLAQ scores of females (62.0) and males (61.8), so the PBL task seemed equally appropriate for women and men according to the quantitative measures. Most mean ratings were between 3.7-4.3, showing 'agreement' with positive statements about PBL. The lowest rating (means 2.4 men; 2.5 women) revealed that students had some anxiety about the final case presentation. Men and women revealed small but significant differences in their responses to three attitude statements ( $p < 0.05$ ), based on independent t-tests. Looking at the individual attitude ratings (max 5, min 1):

Women expressed:

- More trust in the quality of the information provided by other students – they were less likely to consider other students' information to be unreliable (women's mean rating 4.3, SD 0.80 v men's mean rating 3.9, SD 0.80)
- Greater enjoyment of the responsibility of PBL (mean 4.1, SD 0.80 v mean 3.7, SD 0.89)
- Greater enjoyment in working with others from another therapy course (mean 4.3, SD 0.66 v mean 4.0, SD 0.65)

Males showed more preference for lectures than women (item 14), but this did not quite reach significance. Women expressed slightly greater confidence that they could voice their opinion in

the group (mean rating 4.26; SD 0.79, compared with the men's average of 4.08, SD 0.97), but again this did not reach significance.

These quantitative findings suggest that both women and men were quite positive about their initial experience of PBL. However, there was some indications that women were slightly more favourable about both the collaborative nature of the learning task, and also the responsibility of self-managed learning.

### **Qualitative evaluations:**

The qualitative comments to the open-ended questions added further insights into the values and needs that women and men bring to the learning environment. The data were coded initially by reading and re-reading the comments, without regard to the gender of the respondent. Five major themes emerged, each endorsed by at least 10% of women and/or men. The reliability of a sample of the thematic codings were checked with colleagues, and clear agreement was reached. The table below gives the percentage of women and men who included the theme within their written feedback about the positive aspects of PBL.

*--Place Table 1 here--*

The further minor themes that were included by less than 10% of students as reasons for liking PBL were: opportunity to be creative; opportunity to practise communication skills; the group presentation provided a sense of achievement.

The written comments revealed that male students (as a group) were rather more focused on the knowledge and skills that had been acquired through PBL.

“PBL links the work we are doing about physio movements to real situations. It also allows us to explore case studies and discuss them with the OTs and practise our evaluation skills which we will need to employ on clinical placement. It also helped us to make use of books and the internet to research the case” (Male physiotherapy student).

“We learnt about OT methods and learned about a specific illness” (Male physiotherapy student)

The rather few men who did make reference to group processes tended to be OT students, but small sample size prevents generalisation. As noted in Table 1, women (as a group) offered relatively more reflection on the real/ applied nature of the work, and the experience of working in a team (including support, friendship, collaboration). For example:

“I liked the chance of getting to know people better in my seminar group, and the chance to find out more about a patient’s illness in depth” (Female occupational therapy student)

“We learnt more about OT and physio roles; got to know the people in my group better, and learnt more about the condition that the case study client suffered from” (Female physiotherapy student)

“I’ve made friendships that will continue” (Female occupational therapy student).

To the final question that asked what the students had disliked about PBL, many responded that they did not dislike anything about it. Most of the comments that were offered related to the anxiety provoked by the final group presentation (although this comment was often qualified by the observation that valuable skills had been learned), the difficulties of arranging meetings when students' timetables were so different, and the positioning of the work close to an assignment deadline on another module. A few students noted the difficulties of good teamwork, but no clear gender differences were noted.

“ As always with teamwork, it depends upon the whole team pulling together to work through the case study. If one member doesn't do the work, the team can't complete the case study.” (Female occupational therapy student)

### ***Discussion:***

Both the quantitative measures of attitudes to PBL and the open-ended comments suggested that students in their first term of occupational therapy and physiotherapy courses were generally positive about their initial experience of PBL. The positive experiences that students associated with PBL correspond quite closely to the features that Spencer & Jordan (1999) identify as most conducive to adult learning. They describe adults as learning most from tasks that relate to the learner's interests and goals, connect with previous knowledge, focus on real world problems, in a process that is participatory, reflective and based on mutual trust and respect. The finding that students consider a single, rather brief experience of PBL to be helpful for building interdisciplinary team-working has been noted before by Latimer, Deakin, Ingram et al (1999).

Both men and women students were generally positive about the PBL experience, and there

were no gender differences in total attitude scores. However, some gender differences emerged on specific attitude statements. Women students, according to the quantitative attitude ratings, were more likely to express trust in the information provided by other students, rejecting the idea that it was 'unreliable'. This perhaps supports the argument of Belenky et al (1986; p116) 'Connected knowers begin with an attitude of trust; they assume the other person has something good to say'. The quantitative attitude ratings were in some ways supported by the qualitative responses. Women were twice as likely to refer to working with others, and the value of support, friendship and collaboration, when explaining what they had liked about the learning experience. A much smaller percentage of men referred singled out these factors as a reason for liking PBL. The value that women place on the social aspects of learning and mutual support has been noted before (Edwards 1993; Litner, Rossiter & Taylor 1992; Wisker 1996), and conceptualised in terms of 'connected' learning styles (Gilligan 1982; Belenky et al 1986; Gawelek et al 1994).

It remains an issue for further research whether certain categories of women students place particular value on the social contact afforded by PBL. One limitation of this study is that no information was collected about students' child-care or other responsibilities. Previous research has shown that mature female students with children usually have very limited opportunities for out-of-hours contact with other students because of competing domestic roles and lengthier travelling times to the family home, compared with unattached students who have moved to live locally to the university (Parr 1998). Further research is needed into whether women with caring responsibilities place particular value on the support and friendship possibilities that the PBL process affords within the normal timetabled day.

The quantitative evaluations provided evidence that both women and men felt similarly confident to voice their opinion during the PBL group discussions. Previous researchers (e.g. Belenky et al 1986; Gawelek et al 1994) have noted that women do not always have a 'voice' in class. It is unclear whether cultural change has occurred now that women participate in higher education in large numbers, or whether the therapy students are an unusually confident group, valuing communication skills as they know that they will be soon be working with clients and colleagues. Many small PBL groups consisted entirely of women, and 80% of seminar groups had a female tutor. Whether women working in male-dominated PBL groups would express such confidence is unknown. Building on the previous study by Kaplowitz & Block (1998), the effect of the gender mix of the learning groups on students' experiences of PBL needs further research.

The current study is limited particularly by the small number of male students (although the gender balance is a fair reflection of that which is found on most therapy courses). The differences on the quantitative measures of attitudes were quite minor, and given the sixteen comparisons, small differences might have emerged by chance on at least one attitude item. Nevertheless, the students' written comments were intriguing, and the greater social orientation of women, which is supported by previous qualitative research, deserves further research attention, perhaps through more in-depth qualitative methods.

### **Conclusion:**

First year therapy students of both sexes were generally positive about their initial experience of problem-based learning during an interprofessional module. They valued the opportunities that the case-work had provided for developing knowledge, applying theory to practice,

learning about each others' roles and practising interprofessional communication skills. However, women expressed rather more trust in the information provided by other students, greater enjoyment of taking responsibility for their own learning and slightly more positive views about working with others from a different course. In their written comments, more women made reference to enjoying the social aspects of PBL (including groupwork, support and collaboration). The gender differences were not substantial but those that were observed support previous researchers' arguments that women are more inclined to be 'connected learners' who prefer non-hierarchical, collaborative learning processes, and who value the social relationships thereby made with other students. Both female and male students felt able to express their opinions within the seminar groups and both were positive about the contribution that a single sequence of interprofessional PBL had made to their understanding of therapists' roles. Nevertheless the gender comparisons were limited by the small numbers of men in the survey. Further enquiry into gender differences in students' evaluations of PBL is suggested. This study was based on students' opinions and further research into the objective value of PBL for promoting learning in interprofessional contexts is needed.

***References:***

BARROWS, H. & TAMBLYN, R (1980) *Problem-based learning: an approach to medical*

*education*. New York: Springer.

BELENKY, MF., CLINCHY, BM., GOLDBERGER, NR., TARULE, JM (1986) *Women's ways of knowing: the development of self, voice and mind*. US: Basic Books.

BERNSTEIN, P., TIPPING, J., BERCOVITZ, K. & SKINNER, H. (1995) Shifting students and faculty to a PBL-curriculum: attitudes changed and lessons learned. *Academic Medicine*, 70 (3), 245-7.

BLIGH, J., LLOYD-JONES, G. & SMITH, G. (2000) Early effects of a new problem-based clinically oriented curriculum on students' perceptions of teaching. *Medical Education*, 34 (6) 487-489.

CARPENTER, J (1995) Doctors and nurses: stereotypes and stereotype change in interprofessional education. *Journal of Interprofessional Care*, 9 (2), 151-161.

COLWILL, N. & VINNICOMBE, S. (1991) Women's training needs. In *Women at work*, Edited by J. FIRTH-COZENS & M. WEST. (pp42-50). Buckingham: Open University Press

CRAIK, C., GISSANE, C., DOUTHWAITE, J. & PHILP, E. (2001) Factors influencing the career choice of first year Occupational Therapy students. *British Journal of Occupational Therapy*, 64 (3) 114-120.

EDWARDS, R. (1993) *Mature women students: separating or connecting family & education*. London: Taylor & Francis.

GAWELEK, M.A., MULQUEEN, M. & TARULE, J.M (1994) Woman to women: understanding the needs of our female students. In *Gender & academe: feminist pedagogy and politics*. Eds. S. Munson- Deats & L. Tallent- Lenker. London: Rowman & Littlefield Publishers

GILLIGAN, C (1982) *In a different voice: psychological theory and women's development*. Cambridge, Massachusetts: Harvard University Press.

- HAMMEL, J., ROYEEN, C., BAGATELL, N., CHANDLER, B., JENSEN, G.,  
LOVELAND, J & STONE, G (1999) Student perspectives on problem-based learning in an occupational therapy curriculum: a multi-year qualitative evaluation. *American Journal of Occupational Therapy*, 53 (2), 199-206.
- HAYES, K & RICHARSON, J (1995) Gender, subject and context as determinants of approaches to studying in higher education. *Studies in Higher Education*, 20 (2), 215-221.
- HIPP, H (1997) Women studying at a distance: what do they need to succeed? *Open Learning*, 12 (2), 41-49.
- HUGHES, L. & LUCAS, J (1997) An evaluation of problem-based learning in the multiprofessional education curriculum for the health professions. *Journal of Interprofessional Care*, 11 (1), 77-88
- KANTROWITZ, M., KAUFMAN, A., MENNIN, S. et al (1987) *Innovative Tracks at Established Institutions for the Education of Health Personnel*. Geneva: World Health Organisation
- KAPLOWITZ, L., & BLOCK, S (1998) Gender-related group dynamics in problem-based learning: a retrospective study. *Academic Psychiatry*, 22 (3), 197-202.
- KAUFMAN, D & MANN, K (1996) Comparing students' attitudes in problem-based and conventional curricula. *Academic Medicine*, 71 (10) 1096-1099.
- LARY, M., LAVIGNE, S., MUMA, R., JONES, S & HOEFT, H (1997) Breaking down barriers: multidisciplinary education model. *Journal of Allied Health*, 26 (2), 63-9
- LATIMER, E., DEAKIN, A., INGRAM, C et al (1999) An interdisciplinary approach to a day-long palliative care course for undergraduate students. *Canadian Medical Association Journal*, 161 (6), 729-731.
- LITNER, B., ROSSITER, A. & TAYLOR, M. (1992) The equitable inclusion of women in

higher education: some consequences for teaching. *Canadian Journal of Education*, 17 (3), 286-302.

LUNDEBERG, M. & MOCH, S (1995) Influence of social interaction on cognition: connected learning in science. *Journal of Higher Education*, 66 (3), 312-335.

MILLER, C., FREEMAN, M & ROSS, N. (2001) *Interprofessional Practice in Health and Social Care*. London; Arnold.

NHS (2000) Meeting the Challenge: A Strategy for the Allied Health Professions.

<http://www.doh.gov.uk/meetingthechallenge>

PARR, J (1998) Theoretical voices and women's own voices: the stories of mature women students. In *Feminist dilemmas in qualitative research: public knowledge and private lives*. (pp 87-102) Ed. J. Ribbens & R. Edwards. London: Sage.

REYNOLDS, F (1997) To what extent are first year students' attitudes towards PBL influenced by seminar group dynamics? *International Conference on Problem-Based learning 'Changing to PBL'*, Brunel University.

SPENCER, J & JORDAN, K (1999) Learner centred approaches in medical education. *BMJ*, 318 (8 May), 1280-1283.

STERN, P (1997) Student perceptions of a problem-based learning course. *American Journal of Occupational Therapy*, 51 (7), 589-596.

WISKER, G (1996) *Empowering women in higher education*. London: Kogan Page.

#### **Appendix: PBL Attitudes Questionnaire**

Please indicate your level of agreement/ disagreement with each statement below, by circling one option using the following scale:

SD	D	N	A	SA
Strongly	Disagree	Not sure	Agree	Strongly

Disagree

Agree

*There are no right or wrong answers, so please express your own attitudes and experiences.*

- |  |             |
|--|-------------|
| 1. I learned a lot about interventions for chronic pain from the case study                | SD D N A SA |
| 2. I found it difficult to voice my opinion within the group                               | SD D N A SA |
| 3. I felt able to influence the group's decisions  | SD D N A SA |
| 4. I was anxious about the group's presentation  | SD D N A SA |
| 5. I was able to make a positive contribution to the learning within the group             | SD D N A SA |
| 6. I enjoyed the responsibility of case-based learning                                     | SD D N A SA |
| 7. I found it difficult to generate discussion within the seminar group                    | SD D N A SA |
| 8. I enjoyed working with students from another therapy course                             | SD D N A SA |
| 9. Group discussion helped me to make connections between ideas                            | SD D N A SA |
| 10. I thought that the information presented by other students was unreliable              | SD D N A SA |
| 11. I felt that the group received my ideas and information with interest                  | SD D N A SA |
| 12. The case scenario motivated me to study  | SD D N A SA |
| 13. I felt confident about my group's effectiveness  | SD D N A SA |
| 14. I prefer lectures to case-based learning   | SD D N A SA |
| 15. I have developed skills that will help me to participate in future case-based learning | SD D N A SA |
| 16. My group worked as an effective team   | SD D N A SA |

**Table 1: Themes within the open-ended comments –positive aspects of PBL:**

Themes	% women	% men
Depth/ detail of study	50	46

Working in a group/ support from others	44	25
Relevant/ real problem to solve	36	17
Learning about multidisciplinary work/ each profession's roles	32	29
Considering different viewpoints	17	17
Active/ self-directed	10	4