Research

Does a problem-based learning approach benefit students as they enter their clinical training years? Lecturers' and students' perceptions

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Background. This paper presents the findings of a study completed to establish the differences between the lecturers' and students' perceptions of a hybrid problem-based learning (PBL) approach in successfully completing a PBL module in the third year of physiotherapy training at Stellenbosch University.

Objectives. To assess the perception of the achievement of the PBL benefits, the module outcomes, the barriers to learning and positive aspects of the module.

Methods. A theory-based evaluation approach using both qualitative and quantitative methods was used. All students and lecturers involved with the new module were invited to participate in the study. The participants consisted of 37 students and 11 lecturers. The data were collected using questionnaires and focus group discussions for both groups. The different components of the theory (PBL methods) were used as the guiding themes for the analysis of the qualitative data. The quantitative (ordinal) data are presented using descriptive statistics.

Results. The results indicated that the module was enjoyed by both groups. The achievement of the generic outcomes for the module produced mixed results. Areas of agreement and areas of differences in perceptions relating to the achievement of the expected PBL benefits are discussed.

Conclusion. PBL as a new methodology presents challenges for both groups; however, many of the benefits of PBL, in particular self-directed learning, were achieved. Some areas of shortfall are discussed.

A variety of educational objectives have been postulated to be possible using a problem-based learning (PBL) approach. These include: (*i*) the structuring of knowledge to facilitate use in clinical contexts; (*ii*) the development of an effective clinical reasoning process; (*iii*) the development of self-directed learning skills; and (*iv*) the increased motivation for learning'.[1,2] Additional benefits of the PBL approach have been reported. These include improvement in problem-solving abilities, effective literature sourcing, increased ability to work in teams, as well as gaining the knowledge skills and expertise needed for clinical practice. [3,4] Since 2006 it has been a legal requirement of the Health Professions Council of South Africa for new graduates to complete a year of community-based practice before registration as a professional physiotherapist. Many of the settings where the community service is completed are lower socioeconomic rural areas with little or no professional guidance or supervision. The development of aforementioned skills through a specific didactic approach could be very useful for new graduates. The decision to introduce a PBL approach into the curriculum was not taken lightly because of the number of conflicting reports relating to PBL.[5-7] The major debate in the literature is that there is little conclusive evidence that PBL makes a measureable change in any of the aforementioned reported outcomes. A lack of any major effect size has been shown.[7] Owing to the debate in the literature, a number of sessions examining the potential of introducing such a didactic approach were held with various experts in tertiary education and particularly in medical education. It was decided to introduce a hybrid problem-based module[1,8] during the third year of the 4-year physiotherapy training programme at Stellenbosch University (SU). This approach gave the benefit of using traditional pedagogies in the early years of training and then introducing a new method in the third year; therefore a hybrid model was used.

A hybrid programme may provide a more structured learning environment and may be more appropriate for students.[8,9] In our case the third year of training is the one in which extensive exposure to the clinical platform is introduced. We decided to implement the module as the students were entering their clinical years. Owing to the controversy surrounding the benefit of PBL, we wanted to compare the perceptions of students and staff of the effect of this didactic method on the specific outcomes for the module.

Context
Implementation
Generic outcomes for all cases (Table 1) were established for the module; however, each case had specific outcomes that were aligned with some or all of the generic outcomes. These generic outcomes were aligned with the critical cross-field outcomes as required by the South African Qualifications Authority (SAQA).[10]

Faculty members were divided into task teams and the case scenarios were designed. The cases were based on most prevalent conditions treated by undergraduate physiotherapy students in clinical settings.[11] The database used was developed by the department and recorded the pathologies seen by students during the 5 years prior to the implementation of the revised curriculum. The complexity of the cases was established and the cases were presented in order of increasing difficulty throughout the year. These cases were then organised into theoretical blocks, namely preclinical, basic, and intermediate. The students were exposed to the most basic and general cases before entering the clinical platform and then rotated in and out of a theory rotation and a clinical rotation for the remainder of the academic year. The multidisciplinary nature of management of patients with complex disease profiles and/or complex social circumstances was part of the focus of the cases.

Table 1. Generic outcomes for the applied physiotherapy module

1. To integrate the theoretical concepts and principles of the biomedical sciences (pharmacology, pathology), social sciences (psychology, sociology) within the concept of physiotherapy practice (client management)

2. Have a sound knowledge of the medical and surgical management of the client, as well as disease processes applicable to physiotherapy intervention

3. Understand the role of the other team members in the total management of the patient

4. Have a basic knowledge of diagnostic tests (CXR, MRI, blood gases) and understand their impact on patient management

5. Execute the necessary evaluation techniques skillfully, with the necessary adaptations on a model

6. Interpret the findings of an evaluation, formulate a physiotherapeutic diagnosis/hypothesis and prioritise problems

7. Motivate the choice of selected physiotherapeutic interventions and/or the different approaches that can be followed in the management of patients

8. Execute the selected physiotherapeutic interventions skillfully, with the necessary adaptations on a model

9. Set specific, measureable, realistic aims that are attached to a time scale

10. Source and analyse literature

CXR = chest X-ray; MRI = magnetic resonance imaging.

Format of presentation

Each case was presented, discussed and completed in 3 days. The first session was an introduction to the case and the seven-step process for learning was used.[12] The second session on the second day was a practical session for all the practical skills needed for the treatment and/or management of the case. No new skills were taught in these sessions. Students were required to adapt skills (when necessary) already acquired during the physiotherapy science module in the second year of study. During the final session on the third day, students presented the information which they had sourced to solve the clinical case and discuss the proposed management of the case.[13]

Monitoring

This was organised by the module co-ordinator. The monitoring of the implementation process was done through regular focus groups with the students conducted by two of the researchers. Additional feedback could be given via an anonymous suggestion box, individual student appointments and through formal feedback systems. Meetings for the lecturers to discuss any problems that arose and plan the changes required were held on a regular basis, and any further training, e.g. group dynamics, was provided.

Assessment

Assessment of the students in this module was done through web-based multiple-choice tests after each theory block (four blocks) and a case-based integrated essay type exam which was conducted twice a year. The practical components of the module were assessed through directly observed practical skills tests (DOPS) which were performed on patients during clinical rotations.[14]

Methodology

A theory-driven evaluation approach was used to provide a framework for the research of the study. [1,6,13,15-17] The theory used in this study included the basic components of a PBL approach:

- If the students (small groups) are given appropriate (clear and easy to understand) cases (problems) to analyse and develop outcomes for, then the students (small groups) will work out a plan of action to solve the problem.
- If the students work out the action plan, then they will learn where to find the resources to answer the problem.
- If the students find the resources and necessary information, then they will be able to solve the problem.

- If the students have solved the problem (using the resources), then they will learn the content (knowledge, critical reasoning and practical skills) of the cases and then they will be able to achieve the outcomes for the Applied Physiotherapy III module.

A concurrent mixed-methods approach included student questionnaires, lecturer questionnaires, student focus-group interviews, and lecturer focus-group interviews. The questionnaires yielded both quantitative and qualitative data.

Sampling

Purposive sampling was used and all students (*n*=39) and lecturers (*n*=11) participating in the new module were invited to participate in the study. From a class of 39 a total of 37 students took part in the study.

Data collection and procedure

The formulation of the questions was based on the theory (provided above), thus giving guiding themes. This applied to the design of the questionnaires and the focus-group questions for both groups. The questionnaires were also reviewed by an external consultant, who has published widely in the field of PBL.[18,19] All changes and suggestions were included in the final questionnaires which used a five-point Likert scale. The questionnaires were sent to a translator and were back-translated to ensure accuracy. All the data were collected post implementation of the module and before the final exams. Ethical approval was obtained from SU Human Research Ethics Committee (N08/10/301). All participants were voluntary and written informed consent was obtained from all participants before data collection. All transcripts were de-identified, thereby maintaining the anonymity of the participants, and numerical ciphers were used for all transcripts.

The qualitative data generated by the focus groups were recorded using a digital voice recorder and were downloaded and saved on compact discs (CDs) after the interviews.

Data management and analysis

The quantitative data from the questionnaires were entered on an Excel spreadsheet and statistical analysis was done using Statistica 12. Mann-Whitney test for non-parametric data, χ^2 test and frequency tables were calculated. This was done to establish if there was agreement between lecturers and students regarding the different aspects of the PBL methods of the module.

The qualitative data were transcribed from the tapes by an independent transcriber, and thereafter analysed by an independent and experienced research assistant using content analysis.[20] This process included: familiarising oneself with the data; identifying themes; creating a theme list (codebook); coding and categorising data; interpretation of data; and checking. The researchers checked the coding and themes to aid trustworthiness. Both the questionnaires and the focus-group questions were designed by a researcher who was not involved in the module. The other researchers reviewed the questions to ensure that nothing had been excluded. Data were collected by the independent researcher.

Results

From a class of 39 a total of 37 students took part in the study. All 11 lecturers involved in the module took part in the study. The following results are presented detailing the perceptions of both the students and the lecturers on the achievement of the generic outcomes, the perceived positive aspects of the module and the barriers to learning. The results will be presented in the following order: quantitative results, qualitative responses by students and lecturers regarding the implementation of the PBL module, and finally the suggestions by both groups.

Quantitative results

Table 2 presents a summary of the results to the questionnaires. The agreement between the two groups was measured using the Mann-Whitney test for non-parametric data. As can be seen from the table there were a number differences between the students and the lectures. A *p*-value <0.05 indicates the two groups responded differently, and therefore no agreement between the groups was attained. The groups were in agreement most of the time so it appears that the module was successful as a whole. The differences between the groups will be dealt with in the discussion relating to each component of the PBL methods.

Tables 2 and 3 show there was agreement between the groups; however, this agreement was being unsure if the Outcomes 9 (set specific measureable aims) and Outcome 10 (source and analyse the literature) were achieved (Table 3).

Table 2. Mann-Whitney test results: Staff and student perceptions of the implementation of the module

Responses	Mann-Whitney *U*-test (with continuity correction) by variable position			
	p-value	2*1 sided exact *p*	Valid *N* lecturer	Valid *N* student
Cases easy to analyse	0.432	0.498	11	37
Cases became more difficult	0.011[†]	0.016[†]	10	37
Resource lists were useful	0.017[†]	0.024[†]	11	37
Students could find more resources	0.225	0.319	11	37
Facilitation helped with problem analysis	0.040[†]	0.082	11	37
Facilitation helped with planning	0.490	0.513	11	37
Facilitation students understood the cases	0.831	0.847	11	37
Group work became easier	0.265	0.344	11	37
Roles in the group ensure effective functioning	0.021[†]	0.038[†]	11	37
Self-directed learning	0.455	0.513	11	37
Knowledge was acquired	0.632	0.663	11	37
Skills workshops enough time	0.717	0.749	10	37
Skills workshops feedback given	0.411	0.465	10	37
Skills workshops appropriate for cases	0.220	0.286	10	37
Skills workshops helped in clinical	0.004[†]	0.006[†]	9	37
Assessment aligned with cases	0.008[†]	0.012[†]	11	36
Assessment aligned with practical skills	0.340	0.404	10	37
Outcome 1	0.121	0.214	11	37
Outcome 2	0.072	0.150	11	37
Outcome 3	0.013[†]	0.031[†]	11	37
Outcome 4	0.210	0.296	11	37
Outcome 5	0.005[†]	0.011[†]	11	37
Outcome 6	0.037[†]	0.049[†]	11	37
Outcome 7	0.083	0.136	11	37
Outcome 8	0.090	0.164	11	37
Outcome 9	0.989	0.981	11	37
Outcome 10	0.146	0.180	11	37

[†]Marked tests are significant at *p*<0.05000.

The large number of neutral responses in these cases indicate that a large percentage of the cohort did not feel that the particular outcome had been reached, and both groups agreed on this.

Table 3. Frequency tables for Outcomes 9 and 10	
	All groups *N*=48
Category	**Count (%)**
Outcome 9	
Strongly disagree	1 (2.08)
Disagree	6 (12.50)
Neutral	20 (41.67)
Agree	19 (39.58)
Strongly agree	2 (4.17)
Outcome 10	
Disagree	3 (6.25)
Neutral	18 (37.50)
Agree	21 (43.75)
Strongly agree	6 (12.50)

Qualitative results

Table 4 presents the responses from both groups on the facilitators/benefits of the module, with the most comments first to enable recognising the most important facilitators/benefits as experienced by the two groups.

Table 5 presents the responses from both groups on the barriers to learning, with the most comments first to enable recognising the most important barriers to learning as experienced by the two groups.

Table 6 summarises the most important suggestions from the two groups. The similarities between the groups are notable and help with planning the improvements to the module.

Combined results

The use of cases

In the design of the cases both groups were positive about the cases being easy to analyse and focused; this is important as this is the basis of the PBL approach and a necessary step in the ability of the students to master this module. However, in the suggestions for improvement both groups suggested some revision of the cases. The students felt the complexity of the cases did not increase over the year (*p*=0.015). Lecturers were more positive about the increasing difficulty of the case studies than the students were. Lecturers used the pathology and clinical reasoning as guides to making the cases more difficult; this form of scaffolding should help the students.

Accessing resources

The groups agreed on the ability of the students to find new resources. Strategies to improve the students' abilities to search for information included workshops with the librarians on searching techniques, providing the students with resource lists. However, they did not agree on finding the resource lists helpful (*p*=0.02). The lecturers were more positive about the lists than the students were. This is possibly due to

Table 4. The main categories of the students' and lecturers' responses regarding the facilitators/benefits of the module		
Students, *N*=37	**Responses, *n***	**Comments**
Improved clinical reasoning	17	'Learnt how to do clinical reasoning and how to defend my answers in a group'. (SQ1) *translated* 'I really did learn to reason clinically better as well as became more independent in my own learning process and gaining of knowledge.' (SQ33) 'Much more practical and could apply it directly on my clincal blocks.' (SQ36) *translated*
Group work (positive)	13	'Group work. It was nice to work with fellow physio students and to tackle & solve a problem.' (SQ3) *translated* 'The groupwork was fun! & I like the fact that we had such a broad spectrum of information to collect even if it was not necessarily important for the tests.' (SQ12) *translated* 'Watched how other people noticed certain things & reasoned. Learnt from others.' (SQ14) *translated*
Information gathering and organisation of information	9	'You were in charge of your own learning so that the onus was on you to gather all that you thought you required and from that establish your goals.' (SQ 35) 'It taught us how to look for information on conditions & physio approach.' (SQ 5)
Personal growth	6	'Personal growth especially the small classes and individual attention.' (SQ2) *translated* 'I was never bored.' (SQ10) *translated* 'That I can look back now and say it was worthwhile and that I feel beter prepared for next year.' (SQ13) *translated* 'Our class was very supportive and we worked together.' (SQ7) *translated*
Real life issues	4	'It taught me to handle the situation realistically as if it was really happening. And learn realistically.' (SQ24) *translated* 'Get a chance to apply your knowledge on cases that are relevant to everyday life.' (SQ15) *translated*
Lecturers, *N*=11		
Increase students' responsibility	10	'… that the students learn to take responsibility for their own learning.' (LQ9) 'Some students were able to identify their weaknesses and were able to find help within their groups.' (LQ10) 'Self-directed learning.' (LQ6) 'Increased participation of students.' (LQ8)
Changing critical thinking skills	2	'Students have developed critical reasoning skills a lot quicker.' (LQ1)
Improvement in students' confidence and attitude	2	'Self-confidence of students.' (LQ6) 'The students' growth in dealing and adapting to the process.' (LQ5)

SQ = student questionnaire; LQ = lecturer questionnaire.

Table 5. The main categories of students' and lecturers' responses to the barriers to learning in the module

Students, *N*=37	Responses, *n*	Comments
Test and related matters	27	'Clinical reasoning is tested in WebCT, but we never get a chance to demonstrate it even up to to-day. And today there was too little time to reason fully and show it.' (SQ2) *translated* 'It is another way of evaluating and one we have got... had to get used to.' (SQ19) *translated* 'The shift from testing theoretical knowledge to testing clinical reasoning.' (SQ4) *translated*
New methods of learning	12	'Way of learning has to be adapted (difficult after 13 years to change your methods of studying.' (SQ1) *translated* 'Study methods: I did not know how to study for the tests even up until now.' (SQ26) *translated* 'Changing studying methods to understanding rather than parrot fashion learning.' (SQ33)
Group work (negative)	11	'All members of the group according to me did not always deliver sufficient information/research and this really frustrated me a lot because I always want to be as comprehensive as it is possible to be.' (SQ1) *translated* 'Groupwork is a problem if you like completeness, and then you get info from someone who gives very little and does not go to trouble. Then I do it again later.' (SQ29) *translated* 'Group work trusting each member to get the relevant information.' (SQ33)
Quality assurance	10	'The fact that everyone has different information (different groups).' (SQ20) *translated* 'No quality assurance of the work that I learn.' (SQ24) *translated* 'Quality of work between groups.' (SQ32) *translated*
Facilitators and the process	7	'Different facilitators told different groups to focus on different aspects.' (SQ9) 'Lecturers per group differed during the beginning and feedback, so you get different outcomes and ideas for each that eventually oppose each other.' (SQ2) *translated*
Practice session	6	'The practice sessions often focused too much on work covered in Physio II and not on specific tests and Rx methods that were new in Physio III.' (SQ 5) 'Didn't practise new techniques for long enough and spent too much time on old.' (SQ9)
Lecturers, *N*=11		
Lack of critical analysis	3	'Unable to extract "relevant" to the cases info.' (LQ1) 'Students did not critically evaluate the literature and did not know the topic they presented to the group – just read.' (LQ3)
Web CT tests	3	'The unknown process, e.g. WebCT test (in the beginning).' (LQ8) 'WebCT test ++ unclear? – suitability/appropriateness of <u>our</u> questions.' (LQ1) 'WebCT – our setting of the questions improved during the year and the students became more familiar with the WebCT tests and that also reflected in their marks. Although I felt that the preparation for the tests was left quite late; we could have circumvented some of the problems if we had done that. I think a lot of the students did not change their study methods although they were encouraged to do so. In terms of the integration of higher thinking the students were not doing that very well. I think that influenced how they performed and how they understood and answered the questions.' (LFG 2)
Attitudes to learning	3	'Students NOT taking responsibility for own learning.' (LQ2) 'Students did not attend all the sessions.' (LQ3) 'Students attitudes originally – very negative!!' (LQ1) 'I had a practice session with them, before the time. I made special notes with different colours, etc. to motivate them to prepare and I explained what they should prepare and where to get the information. They arrived unprepared, not in the correct clothing for practising. They were also not motivated. The demands on the lecturer are increasing more and more and they are not co-operating.' (LFG 3) *translated*
Group process	3	'Some students worked so much harder than others – seemed that the hard workers always did the "difficult" or most important parts of the cases.' (LQ 3) 'Expectations of what each member's role was in the group.' (LQ9) 'In the cases that I was involved in, yes, I do think they reached their outcomes. There was one specific case when due to ineffective time management at the feedback session they did not discuss this one important thing, a lot of time was spent on other things but not this one so what we did was they came back half an hour early the next day to give feedback about this thing – we did it then.' (LFG L2)
Literature source information	3	'Skills to literature sourcing.' (LQ 7) 'Info that they brought back to the table wasn't accurate but the lecturers don't have time to check the notes.' (LQ 11)

SQ = student questionnaire; LQ = lecturer questionnaire; LFG = lecturer focus group.

the fact that the resource lists were short, so as to guide the students but ensure that they still needed to find resources themselves. Outcome 10 (ability to source and analyse literature) indicated the groups felt neutral about achieving this outcome. When combining the data, one could interpret this as the literature analysis being a skill that students find difficult to master.

Table 6. Similarities between the students' and lecturers' suggestions

Students' categories	Lecturers' categories
WebCT test revision (*n*=13)	Increased resources (*n*=8), lecturers' support
Revision of cases (*n*=10)	Facilitation process (*n*=3)
Facilitation (*n*=10)	Revision of cases (*n*=3)
Practical sessions (*n*=8)	Changes in WebCT test (*n*=2)
Quality assurance (*n*=5)	

PBL facilitation

The two groups agreed that the facilitation of the cases provided help with problem analysis, planning on the outcomes for the case and that the students understood each case at the end of the final feedback session. The lecturers found the facilitation process a challenge as it required a very different approach to the traditional teaching model. A number of workshops were held regarding the best way forward, and as can be seen from the results both groups were in agreement.

Group work

The group work became easier through the year although the two groups did not agree that the roles helped with the effective group functioning (*p*=0.03). To help the development of effective groups the 7-Jump process was used. The students were more positive in their answers to the group roles than the lecturers were.

Module outcomes

As seen in Table 2 the two groups' responses were in agreement on seven of the ten outcomes. The responses showing agreement between the groups are divided into two groups: firstly, the agreement on achieving the outcomes; and secondly, agreement on being unsure if the outcomes had been achieved.

For Outcomes 1 (theoretical concepts), 2 (knowledge of medical and surgical management), 4 (knowledge of diagnostic tests), 7 (motivate for choice of physiotherapeutic interventions) and 8 (execute physiotherapeutic interventions), the results showed agreement between both groups, and they were positive about the achievement of the Outcomes.

For Outcomes 9 (setting aims) and 10 (sourcing and analysing literature) both groups responded similarly, indicating that they were unsure if these outcomes were achieved.

The responses that differed included Outcomes 3, 5 and 6. For Outcome 3 (understanding other team members' roles) (*p*=0.03) students were more positive

about achieving this outcome. For Outcome 5 (executing evaluation techniques) (*p*=0.01) the students were positive about reaching this outcome, while lecturers were neutral about it. Outcome 6 (interpreting findings to formulate a hypothesis for patient management) (*p*=0.04) indicated a significant difference between the two groups; again the students felt more positive than the lecturers did about the achievement of the outcome. In each case the students were more positive about the achievement of the outcome than the lecturers were. Both execution of evaluation techniques and interpretation of findings require higher-order cognitive processes[21] and therefore a lot of practice; it is likely that the students will fully master these skills with further practice in their final year of training.

The mixed response to the achievement of the outcomes gave valuable information that will be needed when the case design is adapted; it highlights the areas that need to be enhanced further. The lecturers tend to be more cautious because of their experience and responsibility to deliver competent physiotherapy graduates.

Practical skills sessions

Including a PBL approach in practical skills development is not commonly used, but because a hybrid model was used the basic knowledge and skills had been taught earlier in the course and the practical skills sessions could build on the students' previous knowledge. Both groups agreed that there was enough time allocated to learning the new skills, that feedback was provided to the students regarding their skills, and that the new skills were appropriate for the cases; however, they did not agree on whether the skills helped on the clinical platform (*p*=0.006); the students were positive about the skills helping them clinically and the lecturers were more negative about this achievement. The value of the skills sessions can also be seen in the achievement of Outcomes 7 and 8 as these both worked specifically with physiotherapeutic modalities.

Barriers and facilitators

Facilitators. The students perceived the main benefits to be improved clinical reasoning, group work, information gathering and organisation, and personal growth. This links with the expectations of PBL. The lecturers perceived the main benefit to be an increase in students taking responsibility. This is the most common benefit voiced in the literature. Both groups' perceptions of the benefits are aligned with the expectations from the literature.[1-4]

Barriers. The most important feedback regarding adapting to the new learning method related to the perceptions of barriers. The students' main barriers to learning in this module were tests, new ways of learning, group work, quality assurance and the case lecturers. Numerous stressors or barriers to learning have been documented in the literature.[22-23]

Discussion

Students and staff differed in their perceptions of whether outcomes were reached. The mixed response to the achievement of the outcomes gave valuable information needed when adapting the case design as to the areas that need to be enhanced further. The responsibility of the lecturers to deliver competent professionals can be seen by their more cautious responses. The more cautious evaluation of the success of the new pedagogy has been reported.[22,24] It was surprising that both groups perceived that the module ensured that they had reached the more content-related outcomes, while uncertainty was expressed whether the more generic outcomes like literature sourcing were attained. The qualitative data presented a different picture. The students perceived the main benefits of the PBL module to be improved clinical reasoning, group work, information gathering, organisation and personal growth. The lecturers perceived the main benefit of the module to be an increase in students taking responsibility for self-directed learning. Both groups' perceptions of the benefits are aligned with the expectations from the literature.[1-4]

The practical skills sessions were a very important part of the introduction of this module. Including a PBL approach in practical skills development has not previously been reported. Students and staff perceptions regarding the value of the skills on the clinical platform were different. The majority of students perceived that the skills sessions were beneficial to their clinical practice, while the minority of staff perceived the

skills sessions as clinically beneficial. It is possible that the staff perceptions were based on anecdotal negative feedback regarding student performance from clinicians. The clinical supervision of the third year cohort is done by ad hoc appointed clinical educators. Staff therefore did not have firsthand experience of third-year students' ability on the clinical platform.

The most important feedback regarding adapting to the new learning method related to the perceptions of barriers. The students' main barriers to learning in this module were tests, new ways of learning, group work, quality assurance and the case lecturers. These stressors are confirmed in literature.[22-23] This was a surprising finding as the didactic methodology was only utilised in the third-year of study and students had the benefit of lecture-based teaching methods in the first two foundational years. These stressors could thus be aligned with the implementation of the new pedagogy rather than the implementation of a specific pedagogy – in this case PBL.

The experience of the students was not dissimilar to that of students in other countries when exposed to a new approach. However, these studies do not include practical skills and usually only the students' perceptions are investigated. There was a wide range of student experiences, again reflecting the diversity of students who have very different approaches and learning styles. This has been reported in other studies.[5,13,22,24] However, the perceptions of lecturers are not well reported and add valuable insights.[25]

We acknowledge a number of limitations to the methodology used which could influence the interpretation of results. We only reported on one cohort of students and staff and only after the first year of implementation. The inherent difficulty in implementing practice change has been widely reported. Much of these uncertainties observed in student and staff perceptions could be related to practice change. Data from this cohort of staff and students will be compared to later years to ensure a more comprehensive view of perceptions of the potential benefit of a hybrid PBL module. However, the data presented in this paper could be informative for programme designers who are thinking of implementing a hybrid PBL module. We acknowledge that the data provide a subjective view of students and staff perceptions of the effect of a hybrid PBL module. Objective data are needed to measure the effectiveness of this module.

Conclusion

Lecturers and students enjoyed the hybrid PBL module and found the experience beneficial. Both groups agreed that the content-related outcomes for the module were reached. Students perceived the main benefits of the PBL module to be improved clinical reasoning, group work, information gathering, organisation and personal growth. The lecturers perceived the main benefit of the module to be an increase in students taking responsibility for their own self-directed learning. The value of the skills sessions on clinical performance needs further investigation. Programme designers can use the hybrid PBL methods later in an academic programme requiring skills development, thereby using both new and traditional methods of teaching and learning.

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