Introducing problem-based learning as a learning strategy for Masters students

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Abstract

The introduction of problem-based learning (PBL) as an innovative strategy is often challenging to both teaching staff and students. This is particularly the case when it is only used on one module within a programme. This case study reports on an evaluation of the experiences of students and staff in the first cohort introduced to problem-based learning in one module of an accelerated taught Masters level programme in occupational therapy.

Most students responded positively to the module with an acknowledged development in personal and professional skills, team working skills, knowledge base, independent learning skills and successful completion of the module. For a minority of students, however, this was not the case. This paper identifies strategies for effective introduction of a problem-based learning approach to a single module and considers how the potential negative impact on some learners might be minimised.

Key Words

Problem-based Learning; occupational therapy; student-centred approach; independent learning skills.

Introduction

One of the requirements of a professional education programme such as occupational therapy is that the curriculum should be designed to develop safe, competent occupational therapists who are fit for contemporary and developing professional practice (COT, 2009a). Part of this expectation, as outlined by the Health Professions Council (2007:5) is that health care professionals should be able to initiate resolution of problems and to exercise personal initiatives as well as become reflective and competent practitioners. In the case of accelerated masters programmes, students are expected to achieve the new graduate standards for practice by the end of a two-year period. The rationale for the shortened programme from three to two years is that graduates already possess certain skills and experience which are transferable. In reality, however, although the entry requirements to the masters programme stipulate a relevant bachelors degree, sometimes the transition to masters level study can be overwhelming. This may relate to the fact that the professional area is completely new to the student; however, it is also notable in regard to mastery of key academic skills.

In the experience of the teaching team this was particularly marked in one module. The aim of the module was to integrate theoretical knowledge into the physical and psychosocial contexts of occupational therapy practice. The delivery format included lectures on ten different clinical settings and conditions over a ten-week period, with the expectation that students would research the topic areas, then develop their understanding when on practice placements.

Although the participating staff felt confident with this approach as they could demonstrate their own expertise, from a teaching and learning perspective the results were unsatisfactory. The assessment results were poor. The students' main criticism of the module was aimed at the method of delivery which left insufficient time for preparation or learning. The students were not involved with active learning or developing their independent study skills, and tended to use what Biggs (2003) described as a surface learning approach. A change to the teaching style seemed appropriate.

Problem-based learning approach

Problem-based learning (PBL) is an approach that encourages active learning through the creation of environments and tasks informed by social–constructivist learning theory. It is an alternative to traditional instructional approaches (Barrett & Moore, 2011). Many authors advocate the use of a PBL approach and have suggested that it provides a student-centred approach to learning which can encourage the student to develop:

- self-directed learning (Wilkie & Burns, 2003).
- critical thinking (Davys & Pope, 2006).
- evidence-based decision making (Halliwell, 2008).
- team working skills (Sefton, 2009).

This approach seemed to suggest an appropriate conduit to enable the masters students to become independent learners and take responsibility for their learning. The aims of a PBL approach fit well with the expectations of masters level study, where it is assumed that students will be motivated to learn, have confidence in their developing study and research skills and have the ability to develop their analytical and reflective skills. Keen (2010) also suggests that a requirement for masters level study is that students take responsibility for their own learning and workload management.

PBL may also lend itself to the development of interpersonal skills and practice skills which form part of the expectations of COT (2010) in regard to professional responsibilities both on practice placements as suggested by Wilkie & Burns (2003), and also in their future career as occupational therapists. Barrows (1986) was an early pioneer of PBL for health care professionals in the UK and outlined seven objectives of this approach (Figure 1.). Although the educational philosophy of PBL has expanded since 1986, these objectives continue to fit well with the learning needs of occupational therapy students and are closely mirrored by the aims of the occupational therapy masters programme.

Barrows (1986) seven objectives of PBL (cited in Reeves et al., 2004).

1. The development of effective clinical reasoning.
2. The acquisition and structuring of knowledge for use in clinical settings.
3. The development of effective self-direction for lifelong learning (or to learn how to learn).
4. Enhancement of motivation for learning the subject / profession.
5. Achieving a deep, active and meaningful orientation to learning.
6. Learning to tolerate doubt (or the concept of uncertainty, conflicting, confusing and ambiguous knowledge and information).
7. The production of capable and competent clinicians, who are willing and able to serve society.

PBL literature suggests that topical case scenarios may be used to provide opportunities for students to explore professional and practice issues (Halliwell, 2008). This may be done within the supportive environment of a peer group and will encourage knowledge construction. They identify what they already know about the case and then decide what further information they need to find out and share (Spronken-Smith & Harland, 2009). This dissection of information as a group encourages the students to think more widely and deeply around a subject area as a result of being exposed to multiple, varied views and experiences – rather than just their own (Harland, 2003).

O'Donnell et al. (2009) suggest that this approach may also enhance recall as the knowledge has been socially constructed rather than passively received. With this process of researching, gathering and analysing relevant information and actively discussing it with their peers, it was hoped that the students would develop the necessary skills and tools to enhance their independent learning skills as well as prepare them for the assessment, which was a portfolio. This strategy may be used throughout a health care programme or within one module. In this case, one module only was selected and to ensure that relevant professional knowledge was addressed, the learning outcomes were pre-set.

Method

The aim of this case study was to evaluate the experiences of students and staff when introduced to PBL in one module of an accelerated taught masters level programme in occupational therapy.

The sample comprised of 15 students who completed a non-standardised evaluation form at the end of the module. Information was also gained verbally from seven staff members. The completion of evaluation forms was optional and anonymous and students were informed of the intention to use their feedback for development of the module. Staff were encouraged to answer honestly and objectively to gain insight into module developmental needs.

Ethical approval was not required as evaluation is part of the normal university process for quality assessment and programme development.

Thematic analysis allowed the emergence of themes from both the students' evaluation forms and staff verbal responses. A method of coding was employed with responses being categorised to develop general themes (Green, 2005).

It was acknowledged that bias may be present and that lack of reliability would prevent the findings being generalised for other settings. However, it was hoped that the findings would provide a framework on which to develop the module.

PBL process

The students were put into learning sets of six or seven members and encouraged to work together to come up with their own understanding of the central issues surrounding a topical case study. The case study focused on a client and their family, and students were encouraged to explore relevant basic scientific and clinical issues, social circumstances, and psychological, ethical and professional issues within a framework of suggested learning topic areas. The learning outcomes were also pre-set to ensure professional relevance.

The case study was supported by a keynote lecture and workshop to give an overview of the clinical area, e.g. mental health. A range of resources was made available on the Blackboard Virtual Learning Environment (BB). This was followed by a tutor-facilitated group meeting where the tutor's role was one of guidance and support rather than teaching. The students would research the chosen topics individually then pool their ideas together to form a presentation. The aim of this was to develop skills in observation, presentation, group working, research, as well as developing their knowledge base, and as Stern (1997) suggests, give the students responsibility for their own learning.

After two weeks, the students presented their findings to other groups of students and staff who would monitor the work for inaccuracies or omissions. All work was then made available on BB. This allowed all students to have access to the materials and information from all the groups so they could expand their own portfolio of resources for future use. This format loosely follows the traditional PBL approach with several modifications. These modifications were made to provide additional guidance and support as this was a new approach to learning for the students, and only one module within a traditional programme.

Findings

Students

Barrett & Moore (2011) suggest that throughout the process of PBL, the learner demonstrates greater retention of information and become more confident in using information from a range of sources. In practice, however, this varied considerably between students however. Overall, this was evidenced by an increase in marks for the module and an improvement in the content and presentation of the information over the duration of the module.

A thematic analysis (Green, 2005) was carried out on the module evaluation forms and was used to identify any recurrent themes, which are listed in Figure 2. Verbal evaluations from staff members were also considered to try to gain an overall understanding of the experience.

Themes from the student evaluations.

- Development of skills in regard to personal development
- Development of skills in regard to professional development
- Development of knowledge base
- Awareness of future learning needs
- Development of team working skills

Personal development

Some students acknowledged improvements in themselves and others as the module progressed, citing increased confidence, creativity, flexibility, and reduction in anxiety when presenting.

Students noted improved presentation skills, improved time management skills, knowledge acquisition from other groups. They could also develop the integration of theory into practical situations by applying the occupational therapy process to the case studies.

These comments relate directly to the professional skills required for occupational therapists in practice – which will hopefully have a positive bearing on future practice placements.

Knowledge base

There was also positive acknowledgement that they had developed their medical knowledge base by gaining information on different conditions in a variety of settings. They had also considered relevant wider topic areas, such as legislation and policy.

These comments may suggest that students were acquiring and structuring knowledge for use in clinical settings.

Future learning needs

It was acknowledged by all the students that they need to continue developing areas such as group skills, management skills and communication skills as well as medical knowledge and practical occupational therapy skills. These comments suggest that some students are developing self-direction and an awareness of professional requirements.

Team working

In the more effective groups, the development of team working skills was also apparent. Students suggested that they could maximise their strengths by working as a team and learn from their mistakes. They felt that an awareness of other people's learning styles and the changing team roles was beneficial to their learning.

However, this was not the case in all groups where issues such as poor organisation, poor time management, non-compliance with rules and an absence of trust suggests difficulties with group dynamics and an inability to work together. It was clear that some students did not engage with the process and completed the minimum amount of work to meet the requirements of the presentation. This resulted in extreme frustration for other group members, who felt that their colleagues were not pulling their weight and that this had a detrimental effect on the group presentation. The admission that less priority was given to presentations because they were not assessed highlights the importance of explicit alignment between the content of the module and the assessment, as discussed in Biggs (2003). This was perhaps lacking in this instance.

However, as Marshall (2007) suggests, students do need to be able to see the relevance and benefits to them and how this will develop them as autonomous learners. This notion of autonomous learners is an expectation of masters students as discussed by Keen (2010); however, for some students it is clearly difficult to make the change from more supported learning to independent learning. Several students expressed the wish for more lectures and teaching to validate the information and provide additional expertise, demonstrating a lack of understanding of the PBL approach to learning.

General comments

Overall, the comments indicated that the most students (12 students) enjoyed the module and could see the benefits of working this way both as a student and as a future health professional.

Three students clearly did not adapt well to the approach to learning and answered all questions in a negative way.

Other students indicated that although they did enjoy the approach, they would have benefited from some changes, such as more guidance at the beginning of the module about the PBL approach, more connections between the group work and the final assessment, and more general support with group work.

Staff feedback

Verbal feedback from staff was positive overall with clear acknowledgement of some of the benefits of PBL for the students. This included the development of a range of skills such as knowledge acquisition, presentation skills and team work. They noted that most students seemed to have engaged with the process. However, there was acknowledgement that this was not universal and that some groups were more effective than others.

There was also some uncertainty about the change of role for the tutor in regard to how much they should contribute to the group discussions and offer their advice. This may have indicated some reluctance to change from a more didactic role, as discussed by Sefton (2009). There was perhaps also a lack of confidence in the PBL approach in relinquishing control of the students' learning and allowing them to choose the learning agenda for themselves. There were concerns that the students may not be accessing the correct information. These fears have been well documented in the literature, especially when first adopting this learning approach (Poikela & Moore, 2011).

Discussion

The rationale for using a PBL approach was to help the students to develop the self-directed learning skills required to study successfully at masters level and to prepare them for the requirements of the module assessment and clinical practice. Marshall (2007) suggested that the learning environment should be responsive to the learners' needs so that a strong sense of purpose and motivation is developed. This was clearly not the case in the original module format.

The introduction of the PBL approach required a great deal of organisation and preparation in the first instance. The first hurdle was to convince the staff group that this approach could be advantageous for the students. Recent literature suggests both students and staff need initial training and ongoing support to apply the process effectively (Dent & Harden, 2009) and that experienced group facilitators, carefully designed case scenarios, learning resources and relevant clinical situations are essential (Price, 2003).

Although the staff were given written guidelines and verbal support, there was no opportunity for them to practise the PBL approach or to observe other staff during a PBL session. This level of support was deemed sufficient as each staff member was not involved in the whole PBL process, but only their own specialised section. The advantage of this from the student perspective is that the facilitator is knowledgeable about the subject area and can facilitate the proceedings more effectively. The disadvantage may be that the tutor may not adapt fully to the PBL approach and be able to switch roles, which may have had an impact on the group process. Although all relevant staff were experienced teachers, these requirements clearly suggested a change in approach for them which could challenge their values and beliefs about teaching, as they would no longer be regarded as 'knowledge givers' (Clouston, 2007) .

Some doubt was expressed by staff about relinquishing control of the students' learning and content knowledge. This supports the findings in a study by Spronken- Smith and Harland (2009) where teachers experienced anxiety and stress generated by the perceived lack of structure in PBL. In this instance the staff did not express these emotions. However, the tutor's skill at using a PBL approach successfully is perhaps something that needs to develop with experience and training. Poikela & Moore (2011) suggest this may

be one of the key fundamental professional development challenges for PBL practitioners. This could have been an issue in this instance – staff were unable to develop expertise with the PBL process as they were not involved in the whole process, but only their own section. They did not have the opportunity to observe other PBL groups in action, which meant they would interpret the guidelines in their own way rather than using a uniform approach across the subject areas.

It could be argued that this diversity would not necessarily be detrimental to the students' learning but could enhance it by creating a variety of methods, which would prevent them becoming frustrated with the process as is sometimes the case with PBL (Davys & Pope, 2006). Indeed, the staff comments would suggest that they were encouraged by the student engagement in the process and the improvement in their skills. It should also be noted that staff participation was not raised as an issue by the students.

From a student perspective, the outcomes of the PBL approach were favourable overall, with a clear indication that many students enjoyed the experience and embraced the PBL process. As Dent & Harden (2009) suggest, an effective group is cohesive, motivated, mutually supportive, knowledge is freely shared, and all participants are actively engaged in learning. For some groups this was true. They adopted an active learning style by developing their knowledge in a supportive social environment through discussion and debate, which will hopefully contribute to their learning in future modules and on practice placements.

The students could clearly identify development in their personal skills, professional skills, knowledge base and future learning needs and were positive about the experience of learning together. They could use research and best practice guidelines as suggested by Halliwell (2008) as well as confidently use professional and scientific language as discussed by Sefton (2009). These recognised developments align well with the seven objectives of PBL (Barrows, 1986) in relation to clinical practice and team working skills, which will be required in future practice.

This success and positive attitude was not achieved in all groups, however, and several suggestions may be put forward in response to this result. Some students seemed insufficiently prepared for PBL and clearly lacked understanding of the advantages of this approach. Read & Hurford (2008) suggest that some learners may feel overwhelmed by the expectations of student-centred learning, which may be true for students whose previous experience was of a predominantly didactic teaching style. However, these students have entered a postgraduate programme and should have certain expectations of masters level study. Even so, Poikela & Moore (2011) suggest that self -directed learning needs practice by the students and support and scaffolding from the PBL tutors.

Perhaps the students were given insufficient time to practise this skill and insufficient support as certain skills and abilities were assumed. This practice and support may also need to extend to establishing successful groups at the beginning of the module.

One group did not engage with either the PBL approach or each other, which resulted in extreme frustration for some group members, and lack of success as a group. This is not an option for professionals working in health care settings where they are required to work in teams – perhaps this indicates a lack of insight into future professional responsibilities.

Another possible reason for poor team working could be an outcome-led approach to study, with the focus being solely on the assessment. This may have been exacerbated by the fact that the presentations were not assessed and could have led to the perception that they were not important. Macdonald (2005) suggests that PBL assessments must be compatible with both the learning outcomes and the learning process and must include assessment of the generic skills and attitudes developed through PBL. This was clearly not the case here and is something which will require consideration when the module is due for review.

Another issue which may impact on the success of the PBL approach is the fact that this is a single PBL module within a traditional curriculum. O'Neill & Hung (2011) discussed the challenges of a single PBL module and the need for strategies to facilitate the students' understanding of the PBL process. Although it could be argued that this module did not use a true PBL approach but an adapted version of one, the need for supportive strategies does need to be considered. The modifications, which included pre-set learning outcomes and provision of an educational framework, were made to ensure compliance with professional educational requirements (COT, 2009b). Although this is clearly a variation on a traditional approach,

it could be argued that this enhances relevant knowledge development and reduces the frustration of 'going off on the wrong track'as described by Davys & Pope (2006). Indeed, Savin-Baden (2003) identified different categories of PBL which can be used in different situations and Barrett & Moore (2011) suggest that PBL practitioners need to keep looking at new ways of using PBL in higher education to develop and enhance the impact on student learning.

The use of a PBL approach in other occupational therapy programmes has been documented in the literature (Reeves et al., 2004; Davys & Pope, 2006; Halliwell, 2008) with varying outcomes. Although the occupational therapy programmes discussed were mainly at undergraduate level, and involved the entire programme rather than a single module, the overall findings concur with the evaluations from this masters level programme. The positive outcomes suggest deeper learning, enhanced clinical reasoning skills, enhanced knowledge acquisition, and development of the skills and abilities required for professional practice. The negative outcomes relate to group working and lack of direction, which again are similar.

This evaluation was based on only one cohort of 15 students using an informal, non-standardised evaluation technique, which limits the ability to draw conclusions from the findings. However, the positive aspects would encourage continued development of this approach to learning and further research. Despite the limitations of the evaluation as outlined above, overall, the aim of the project, to encourage active learning through a student-centred approach, has been achieved for the majority of students.

Conclusion

A PBL approach was introduced to one module on an accelerated occupational therapy programme to develop independent learning skills to support the students with masters level study, to prepare them for the assessment, and for clinical practice placements. The aims of PBL seemed to fit well with the needs of masters level occupational therapy students.

For most of the students, this approach seemed to have worked well with development in personal and professional skills, team working skills, development of their knowledge base and successful completion of the module. Many students also acknowledged the benefits of this style of learning and the additional skills they have developed such as presentation skills, critical thinking abilities and problem solving skills. For some students, therefore, it can be concluded that this approach has promoted active learning and the transition to masters level study. It will hopefully continue to be used and developed as they continue through the course.

However, for other students this was not the case, as they did not engage with the PBL process. There could be many reasons for this failure to participate fully but the following strategies will be considered when the module is reviewed:

- improved support and training for staff members taking part in PBL activities
- to develop students' understanding of the benefits of group work and the PBL approach before the module starts
- to prepare the students more thoroughly for self-directed learning and provide practice and support throughout the process
- to ensure there is constructive alignment between the module content, the learning outcomes and the assessment
- assessments should focus on the learning process as well as the learning outcomes
- give greater attention to the design of the problems, the role and sequence of the different learning resources
- provide ongoing support and encouragement within the electronic resources to develop students' learning

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