Do interprofessional education and problem-based learning work together?

Catherine Thompson, Bristol East Support and Recovery Team, Speedwell Centre, Bristol, UK

SUMMARY

Background: Problem-based learning (PBL) and interprofessional education (IPE) are becoming increasingly well-established concepts in modern undergraduate medical school curricula. The delivery of IPE through a PBL setting appears to hold good face validity. However, there has to date been no published review of the evidence for the value of combining these two teaching methods.

Methods: A review of the literature regarding the use of IPE and PBL together. Firstly the rationale for delivering IPE though PBL is examined and reviewed. Secondly the current evidence for the efficacy of such a model is reviewed.

Results: The current rationales for delivering IPE though PBL are presented. The practical and theoretical barriers to delivering IPE though PBL are presented. The current evidence base regarding outcomes for delivery of IPE through PBL is presented with reference to student knowledge, skills, attitudinal outcomes and facilitator views.

Discussion: There is favourable evidence for IPE within PBL settings improving attitudes towards other professional groups. Little is known regarding knowledge and skills outcomes for this model. Facilitator views of the model appear favourable. Collaboration between IPE and PBL appears to be most appropriate for areas of the curriculum that will have relevance for all in their professional lives. It is suggested that delivery of IPE though PBL could fulfil a major role in improving interprofessional relations, and ultimately patient care. If true IPE PBL groups are to be implemented within curricula. The impact this will have on resources and the cross-professional planning needed will be considerable.

There is favourable evidence for IPE within PBL settings improving attitudes towards other professional groups.
INTRODUCTION

Medical school curricula have seen major changes over the past 10 years, in part promoted by the General Medical Council (GMC) document Tomorrows Doctors, which highlighted areas of core competency for all doctors in terms of developing knowledge, skills and attitudes. Many undergraduate curricula are now incorporating these core competencies into their curricula, with both content and teaching styles being adapted to embrace all three areas. These adaptations are demonstrated in ‘hybrid’ curricula that employ a variety of teaching methods and learning environments, including problem-based learning (PBL) and interprofessional education (IPE). In its original terms, PBL can be defined as ‘the learning that results from the process of working towards the understanding or resolution of a problem’. IPE is promoted by the GMC’s Guide to Good Medical Practice, which holds as one of its core principles that doctors must work effectively with colleagues from all health and social care professions. IPE can be defined as ‘occasions when two or more professions learn from and about each other to improve collaboration and quality of care’.

Both IPE and PBL are well-recognised concepts within medical education that have been extensively reviewed and evaluated elsewhere. This report seeks specifically to look at the use of IPE and PBL together, by firstly examining the rationale for delivering IPE through PBL, and secondly reviewing current evidence for the efficacy of such a model.

THE RATIONALE FOR DELIVERY OF IPE THROUGH PBL

In considering the concept of delivery of IPE through PBL it is helpful to consider the necessary elements for a quality IPE experience, which have been reviewed and defined as eight characteristics (see Box 1).

The characteristics seem to fit well with the ethos of PBL, and the process of discovery that it supports through small group processes. The characteristics of interactive, reflective and experiential learning are already at the heart of uniprofessional PBL-type learning. It is difficult to argue that large group seminar-type work or self-directed learning would encourage these characteristics. When considering commonality of learning, interprofessional planning and collaboration of outcomes across professions, the difficulties of combining IPE within a PBL format become apparent. Returning to the core competencies of knowledge, skills and attitudes it can be seen that many learning outcomes are common to all professions, and neatly fit the IPE model within a PBL setting. The model particularly suits the teaching of clinically-based topics where many different professionals can easily be shown to be involved in providing care and treatment, the topic of HIV being one such example. The core competency of knowledge is, however, an outcome that can differ significantly between professions. The question arises of how can a PBL group involving a professional mix cater for these different needs? A large number of IPEs delivered through PBL settings run the risk of all groups missing out on vital elements of the knowledge that is core and specific to their own specialty. At the other end of the spectrum, parallel multiprofessional learning occurring within the PBL group defeats the intended purpose of IPE.

One solution is to embed key IPE PBL group sessions within the curriculum. Here, a focus can be allowed on those outcomes common to IPE that are separate to uniprofessional PBL groups. It should be remembered, however, that if the PBL model is to be adhered to strictly, the group dynamics and continuity of relationships that the group supplies are vital in the learning process. One-off or occasional IPE small group sessions are not true PBLs, and the true challenging of stereotypes (as suggested by characteristic 8) may be difficult to achieve. IPE implies interprofessional facilitation, and a co-facilitated PBL group may mean that learning outcomes specific to the professional group can be met whilst also ensuring the desired outcomes of IPE as a whole.

If IPE is to be incorporated within the PBL component of a curriculum then the question of when it is best to do so should be posed. Combining

Box 1. Characteristics of a quality interprofessional education experience

1. Learning is common across professions.
2. Participants compare and contrast their roles.
3. Learning is interactive.
4. Learning should involve reflection.
5. Activities include experiential learning.
6. Planning involves an interprofessional team.
7. Learning outcomes include collaboration between professions.
8. Activities should challenge stereotypes.
interdisciplinary groups too early within curricula could lead to confusion about professional identity, but if combined too late then there is a risk that students will have already developed professional stereotypes. It is perhaps in the variant of PBL as case-based learning (CBL) that IPE has its home within undergraduate curricula. Here, in clinically-based topics, it is easier to group together interdisciplinary learning experiences that are relevant to all.

Assessment and evaluation form a vital part of any teaching method, and assessing and evaluating IPE within a PBL setting falls prey to the same difficulties as those seen in the two areas separately, with the specific impact of IPE within a PBL session being doubly hard to assess.

The practical barriers to providing IPE within a PBL setting include those that already exist for PBL itself and more so. Timetabling IPE between several disciplines requires longevity of coordination across multidisciplinary curricula, ensuring the consistency and continuity of PBL groups, and there must be a consensus on funding for this between disciplines. Finally, the combined development of expertise in facilitation of both IPE and PBL needs to be considered (see Table 1).

### Table 1. Barriers to interprofessional education within the setting of problem-based learning

<table>
<thead>
<tr>
<th>Type of barrier</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical</td>
<td>Timetabling and coordination across multiple curricula&lt;br&gt;Maintaining continuity and longevity of the PBL group&lt;br&gt; multisource funding needed&lt;br&gt; Co-facilitation by different professionals, more facilitators required.</td>
</tr>
<tr>
<td>Theoretical</td>
<td>Differing learner needs regarding knowledge and skills (attitudes?)&lt;br&gt;Sacrificing one learner group’s needs for another’s&lt;br&gt; Little evidence for efficacy&lt;br&gt; Difficulty in assessment of efficacy and measuring outcomes</td>
</tr>
</tbody>
</table>

Outcomes emphasise improved team building, communication skills and appreciation of the roles of others.

### THE EVIDENCE BASE FOR DELIVERY OF IPE THROUGH PBL

A literature search was conducted to review the evidence for the efficacy of IPE within a PBL context. (The search engines used were Psych Info, Medline and PubMed. The terms interprofessional education, interprofessional learning, multidisciplinary learning and multiprofessional learning were individually combined with the terms problem-based learning and case-based learning.) Articles were selected for review if they had a primary focus on an IPE experience within the context of PBL. It is recognised that many IPE experiences occur within small group settings, but articles were selected only if the group setting was explicitly stated as being of PBL type (including CBL variation), and if the meaning of IPE and PBL were interpreted in similar ways as outlined above. This yielded seven original research articles that are reviewed below (see Table 2).

There is limited data regarding outcomes from interventional studies; however, it has been found that students welcome case-based learning in cross-professional groups. Students in intervention (cross-professional) groups developed more positive attitudes towards different health professionals than those in control uniprofessional groups.9 In a direct comparison study of interprofessional learning methods, students from across professions reported higher levels of satisfaction with case- or problem-based interprofessional learning than with other interprofessional learning methods, such as computer-mediated learning.10 An interventional study with the specific aim of measuring the improvement of attitudes towards interprofessional collaboration of undergraduate health care students within PBL settings reported the improvements of attitudes in male students in the intervention (cross-professional) group, and in attitudes pertaining to the competence and autonomy of individuals in ones own
Table 2. The evidence base for the delivery of interprofessional education through problem-based learning

<table>
<thead>
<tr>
<th>Outcome measured</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge/skills</td>
<td>No published data</td>
</tr>
<tr>
<td>Attitudes</td>
<td>Students prefer cross-professional groups\textsuperscript{9}</td>
</tr>
<tr>
<td>Facilitator views</td>
<td>Enjoyable but more challenging\textsuperscript{15}</td>
</tr>
</tbody>
</table>

More specific successful uses of IPE within PBL settings in certain clinically-based areas of the curriculum are also reported, for example in gerontology and HIV medicine: here, outcomes emphasise improved team building, communication skills and appreciation of the roles of others.\textsuperscript{12,13}

There was no published data found with regard to the use of IPE within PBL settings for basic science areas of the curriculum. Similarly, there was a lack of information concerning skills/knowledge-based outcomes for IPE within a PBL setting, or with regards to whether any professional group benefits particularly. However, some limited evidence suggests that females as a whole may prefer the IPE experience within PBL, as opposed to uniprofessional PBL.\textsuperscript{14}

Evidence suggests that facilitators view interprofessional PBL groups as enjoyable but more challenging than uniprofessional PBL, and that appropriate facilitator training is vital in promoting interprofessional learning within PBL settings.\textsuperscript{15}

CONCLUSION

Reports provide favourable evidence for IPE within PBL settings improving attitudes towards other professional groups, and thus fulfilling one of the main aims of IPE. The ethos of PBL and limited evidence suggest that the PBL format may be the most appropriate way for IPE to be delivered. The terms IPE and PBL are open to interpretation, and curriculum planners should be aware that one-off small group interprofessional learning sessions are unlikely to convey the same benefits in terms of reducing stereotypes and improving attitudes as the continuity of a true PBL group. If true IPE PBL groups are to be implemented within curricula, then the impact this will have on resources and the cross-professional planning needed are considerable.

The evidence suggests that the collaboration of IPE and PBL are most appropriate for those areas of the curriculum that will have relevance for all in their professional lives, i.e. clinically-based topics that involve a multidisciplinary team. It is here where interprofessional PBL could make a real difference to teamwork, and ultimately improve patient management. There was no published evidence found specific to skills and knowledge outcomes from IPE within the PBL setting, and this is likely to reflect the wider difficulties of assessing these competencies from PBL and IPE as a whole.

If we accept that the primary aim of interprofessional PBL is to improve the vital competency of attitudes, then we can be relatively assured from the available evidence that it appears to be achieving this.

REFERENCES


Corresponding author’s contact details: Dr Catherine Thompson, Consultant Psychiatrist, Bristol East Support and Recovery Team, Speedwell Centre, Whitefiled Road, Bristol BS5 7TS, UK. E-mail: catherine.thompson@awp.nhs.uk

Funding: None.

Conflict of interest: None.

Ethical approval: This paper does not describe research on human subjects, and as such ethical approval was not required and not sought.