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Turning ideas into action

INNOVATING EDUCATION: THE CASE FOR INCLUDING PROBLEM-BASED LEARNING AT UNIVERSITY

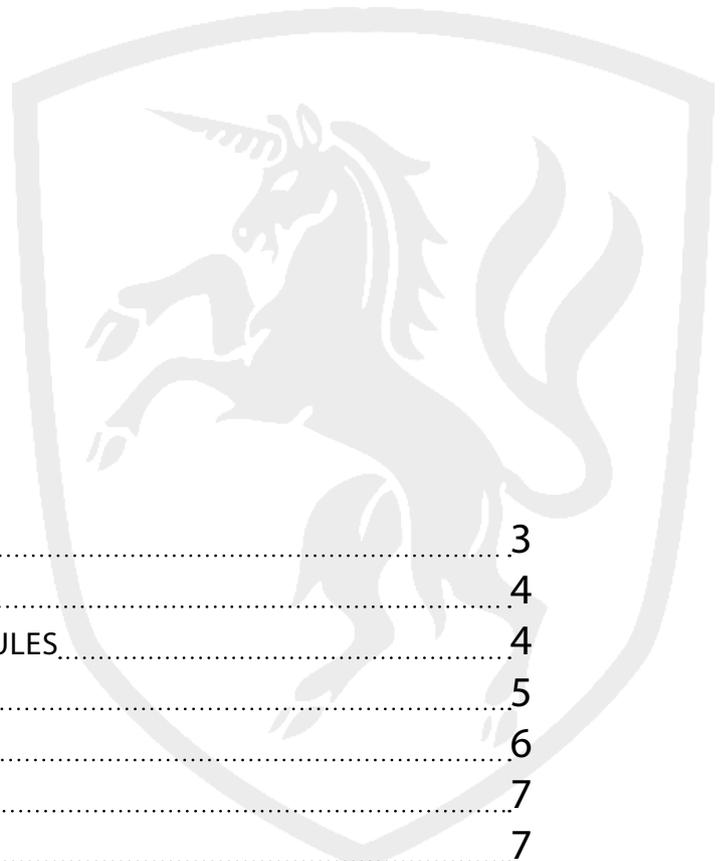
ACADEMIC-POLICY PROPOSAL

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EXECUTIVE SUMMARY

We aim to diversify higher education through the inclusion of problem-based learning in the curriculum. Problem-based learning (PBL) “reflects a learner-centred environment that concentrates on students’ use of disciplinary concepts, tools, experiences and technologies to answer questions and solve real-world problems.”¹

This already commonly occurs in the study of Medicine but our proposal seeks to extend this method to other schools. We will look specifically at restructuring modules, lectures, tutorials and exams to reflect this approach, as well as the creation of entirely student-led PBL courses. These student-led courses can also be used as a way to credit existing extra-curricular activities. We argue for a three-tiered system of implementation: at the first level, adapting existing courses to include PBL elements; at the second level, creating entirely PBL courses by teaching and assessing solely according to PBL methods; and at the third level, introducing the aforementioned student-led PBL courses taking the form of individual and group research projects. The implementation of PBL can be achieved on a sliding scale without necessitating a complete overhaul of existing structures.

The proposal shall focus on application at the University of Edinburgh for clarity’s sake. It is also recognized that the suggestions are most applicable for the Scottish higher education system. However, we do argue that with slight alteration, the suggestions can be applied to university programs all over the United Kingdom. This proposal is influenced by a greater desire for students to be in control of their degrees and their own learning.



THE CASE FOR INCLUDING PROBLEM-BASED LEARNING AT UNIVERSITY

CURRENT SITUATION

Problem-based learning was first conceived at the McMaster Medical School in Canada, and has been implemented at higher-education institutions worldwide.ⁱⁱ The fact that PBL systems now exist on a wide spectrum - from primaryⁱⁱⁱ to higher education - and is widely perceived to be a successful tool of teaching difficult content, showcases its flexibility as a method.^{iv}

The proposed implementation of a PBL program at the University of Edinburgh would be targeted initially towards 'pre-honours' years since there is a greater opportunity for experimentation in these years. Furthermore, PBL teaching methods can shorten the learning process as they emphasise building knowledge and understanding simultaneously. This is achieved by continuously interacting with the materials in a group, as opposed to in traditional lecture-based, independent study which emphasizes building the knowledge first and the understanding subsequently. This is ideal for 'pre-honours' courses that typically have much larger class groups and so less contact time with faculty member in which to build the necessary understanding. An observable desire exists within faculty of the School of Social and Political Science for increasing the use of PBL in the curriculum, which supports the validity of our position.

The discussion will now turn to possible avenues for implementation of PBL.

IMPLEMENTATION WITHIN UNIVERSITY-LED MODULES

As has been stated above, elements of PBL methods can be introduced to varying degrees. Within this proposal it is suggested that there be three main levels of PBL implementation: firstly, adding PBL methods of assessment to existing university-led courses; secondly, creating entirely PBL, university-led courses by using solely PBL influenced methods of teaching and assessment; and thirdly, by creating student-led PBL courses taking the form of individual research projects.



ADDING PBL ELEMENTS TO EXISTING MODULES

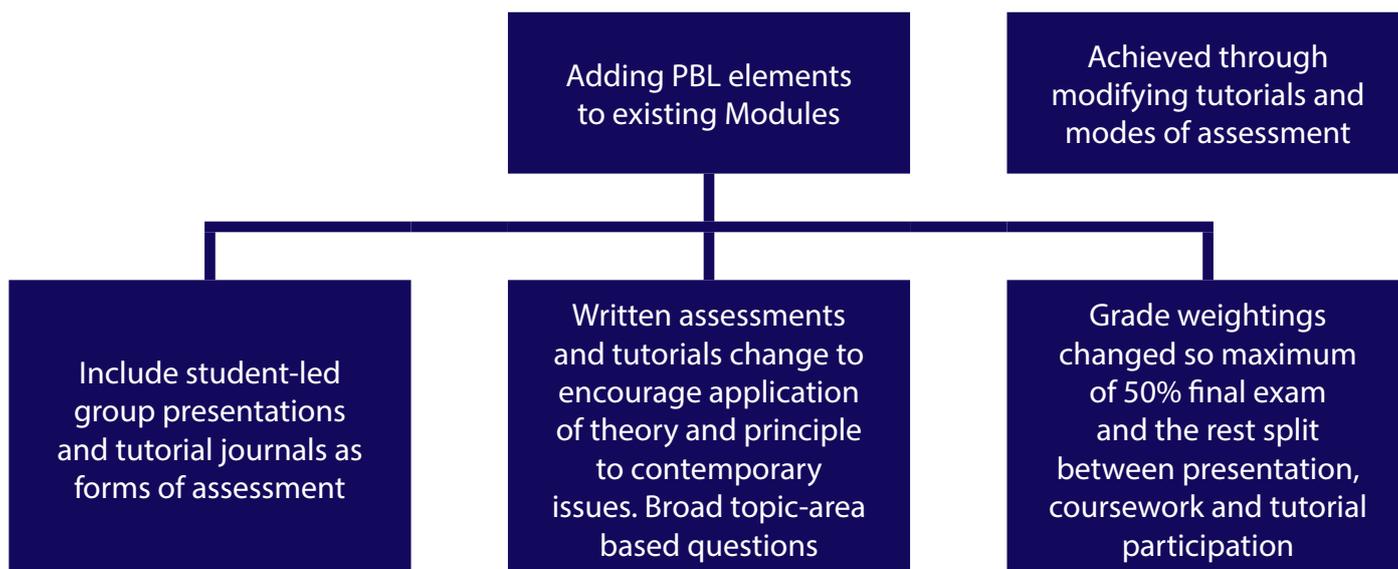


Figure 1

As is shown by Figure 1, PBL within university-led modules should be characterized by a restructuring of assessment methods and grade weightings, in addition to a shift in emphasis towards student-led research and discussion. The central benefit of PBL for disciplines other than medicine is the opportunity for students to practically engage with research methods. On the lower end of the scale, a school may assign one PBL assignment per semester.

The Humanities and Social Sciences traditionally center on reading and writing as the primary form of learning, which is not very conducive to PBL. However a tactic that can be used to encourage PBL among students is to take a familiar principle or theory and set it in a broad contemporary topic area. In this way the students are encouraged to relate to challenging principles and theories in an unfamiliar context, hence increasing their ability to apply knowledge directly. However they are also given a broad scope within which to apply this knowledge, hence allowing for creativity of approach as they have to identify their own research area.

One example of this method within the university has taken place in Dr Kieran Oberman's lectures on Political Thinkers

using debates and polls. During these lectures Dr Oberman has encouraged the student body to interact with large philosophical questions such as "to what extent am I free to act without interference by the state?" by discussing varied contemporary examples from everything from the Naked Rambler to the Stuebing & Karolewski case on incest. Discussions such as these could also be easily facilitated in tutorials and essay questions could be set in this vein by assigning simply a topic and a principle as opposed to a set question. Through this method students are identifying and carrying out a research project.

A further typical form of PBL assessment includes student-led presentations.^v In these students could address the issue that was set to them and present the strategies they used to come to their conclusions.

Similarly, personal academic journals can be used as a form of assessment.^v These journals should be used to complement a student's understanding of lecture content, or engagement with a problem they have been assigned. This allows them to reflect on and share their understanding, and experience of the materials. Furthermore, the use of continuous assessment will provide a more



realistic reflection of the student's capabilities by the end of the year than heavy weighting on final exams, which can be very stressful and hence provide a skewed reading of the student's capabilities.

Crucially, many of these assessment methods are comparable to the team-based situations which students will find their selves in the professional sphere. Importantly, all group work should involve peer and self-as-

essment, necessitating collaboration whilst encouraging independent learning. What these examples of assignment and assessments have in common is that they create transferable skills. These skills will become useful when the student tackles their dissertation, and more importantly when they enter the professional-sphere. This challenges the current mode of assessment that fosters rote learning by students, which has little relevance for lifelong learning.

CREATING ENTIRELY PBL MODULES

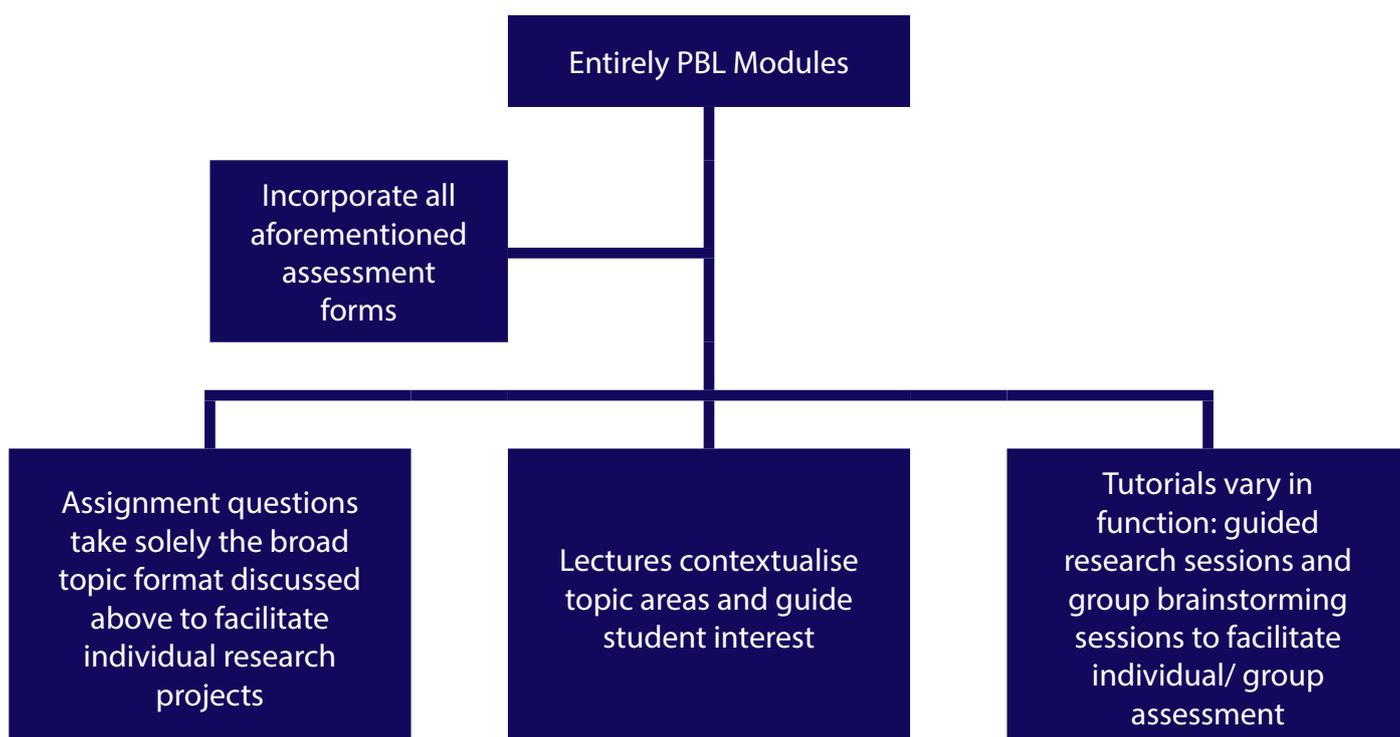


Figure 2

For creation of entirely PBL modules it is suggested that the aforementioned forms of assessment are exclusively adopted. It is felt that in order to incorporate the PBL ethos of student-centered learning, assignments should consist of a variety of broad topic areas relevant to the subject area of the course from which the student can decide their field of interest and devise their own research problems.

Lectures will be structured so as to contextualize these issues and guide the student's interest.

Due to the variety of assessment forms

tutorials will have to diversify in structure throughout the term. Initially they could take the form of the debates outlined above. At times of individual assessment, such as written assignments they could act as guided research sessions where students could consult with their tutors regarding their research questions. Conversely, during periods of group assessment, such as in group presentations, tutorials could be used for group brain storming sessions.

Certain forms of assessment, such as personal academic journals, could be used throughout.



ADDRESSING OBSTACLES

The introduction of PBL to schools within the University of Edinburgh should not be a difficult transition as elements are already operable in many existing schemes.

For example, within certain areas of the Social Sciences, such as politics, there exists a non-credit compulsory course, called "Fundamentals". Such courses bring together solely those on the degree program. They tailor a student's learning to the style required for that discipline, often through tasks compatible with PBL assignments. In the first semester, Sociology students are asked to keep a reflective online blog, similar to the reflective journal discussed previously. Further, in the second semester, these students learnt about research methods concerning ethnography, and were assigned the task of conducting participant observation at the National Museum of Scotland. These skills are addressed in recognition of their essentiality for 'Honours' years. Therefore, wider implementation of courses such as Fundamentals throughout various degrees can be used bridge the transitional gap in the move towards PBL. Fundamentals courses are ungraded but mandatory and can be used to compliment and troubleshoot PBL assignments outlined above.

IMPLEMENTATION OF STUDENT LED COURSES

The final stage for PBL within this proposal would be the implementation of fully student-led courses. This process has been started at the University of Edinburgh by the piloting of the "SLICC" (student-led individually created courses) programme.^{vi} After consultation with one of the course conveners, it is apparent that the aims of this proposal are concurrent to those of SLICCs. Therefore the following section will be an evaluation of the benefits of the programme and suggestions for future improvement and implementation.

Currently the SLICCs cycle runs as follows. Firstly, individual students meet with designated academic mentors to devise their

study programmes. Secondly, three learning outcomes are designed in accordance with the programme devised, the final form of these outcomes – whether it be a blog, an essay, a series of presentations, a policy proposal, etc. – are negotiated between the student and their mentor. Thirdly, as SLICCs currently operate as a ten-credit course there is a stipulation that the time dedicated to the programme should be the equivalent of two weeks of full-time study, or roughly 100 hours. Finally, the student provides a self-assessment on their progress that is then negotiated with their academic mentor to produce their final grade.

The University of Edinburgh SLICCs programme does not currently accommodate group projects. It is recognised that the programme organisers have expressed this desire for the future and some suggestions as to how this could be logistically achieved shall be outlined below. Launch events at the start of each semester could be used to bring together all interested participants. Available subject areas, would be subject to departmental support and provision of academic mentors for the programme. It is important to note that academics should also be taught about and integrated into the process of PBL, as supported by Lee et al's findings.^{vii} Interested participants could then take part in organised brainstorming sessions on their subject-area of choice.

It is felt that the central benefits of the SLICCs are the focus on independent learning and assessment as well as the allowance for innovative forms of examination, which are more amenable to different forms of learning. It can be argued that this is a weakness within the current curriculum where the traditional focus on reading and writing based learning is disadvantageous to those who favour other modes of learning. Neil Flemming's research into the impact of modes of presentation in shaping learning outcomes clearly shows that individuals are not universally suited to any single form of learning.^{viii} Hence through allowing a greater independence of study and examination, the SLICCs programme allows students to learn in a way that is more



suiting to their personal intellectual requirements. This is particularly true of those whom Flemming has identified as “kinaesthetic” learners, who “learn theory through its application”.^{viii}

It is also not difficult to imagine student-led projects that would take students directly into contact with employers, such as what Fresh-Sight, a business consulting initiative run by students at the University of Edinburgh is currently doing.

Through SLICCs, societies undertaking large projects could be considered for crediting on a project-by-project basis. Both the Rector of the University of Edinburgh, Steve Morrison and the President of the Edinburgh University Students Association, Johnny Ross-Tatam, support this.

CONCLUSION

It has been argued that PBL methods can be implemented on a sliding scale, without necessitating a complete overhaul of existing structures. In fact, PBL can be used to strengthen existing structures by shortening the learning process in university-led courses and granting full recognition for all of student’s extra-curricular activities in student-led SLICCs.

There is already an observable appetite for PBL methods both amongst the faculty and the student body. Adapting teaching and assessment methods would bring Scottish universities closer into line with continental European and American universities that generally favour continuous assessment over intensive final exams, hence making the education students receive in Edinburgh more translatable. Furthermore, honing the ability to directly apply knowledge to unfamiliar contexts will better prepare graduates for the job market.



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