Programme Assessment Strategies

Funded by the National Teaching Fellowship Scheme

# Peninsula Medical School

## A case study from the Universities of Exeter and Plymouth

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www.pass.brad.ac.uk

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# *Peninsula Medical School Case Study*

## 1 Introduction

It is well established that assessment acts as a driver for student learning (Biggs & Tang, 2007; Dunn et al., 2004; Ramsden, 2004) and there is evidence that assessment which is typically linked to module learning outcomes is not always effective in developing student capabilities (Rust, 2007). However, the development and implementation of effective alternatives such as programme-based assessment (PBA) strategies are challenging for programme teams. One reason for this is that there is a lack of suitable evidence-based guidance and exemplars.

This case study forms part of the National Teaching Fellowship Scheme (NTFS) Programme Assessment Strategies (PASS) project. The PASS project aims to identify essential principles of PBA, which can then be used to implement and test the effectiveness of programme assessment strategies (Hartley et al., 2008). This case study is a contribution to that debate. The case study concentrates on approaches to PBA within the Peninsula Medical School (PMS), at the Universities of Exeter and Plymouth.

In selecting the PMS case study we have defined PBA as assessment which focuses on stage or programme level learning outcomes (Nicol & Macfarlane-Dick, 2006). Our definition has synergies with the QAA concept of 'synoptic assessment':

*"An assessment that encourages students to combine elements of their learning from different parts of a programme and to show their accumulated knowledge and understanding of a topic area. A synoptic assessment normally enables students to show their ability to integrate and apply their skills, knowledge and understanding with breadth and depth in the subject. It can help to test a student's capability of applying the knowledge and understanding gained in one part of a programme to increase their understanding in other parts of the programme, or across the programme as a whole"* (Quality Assurance Agency, 2006).

Programme based assessment has been adopted by several US colleges but is not widely used in the UK. This case study relates to one programme offered by the PMS which closely matches the definition above.

The national context for the design of medical curriculum and assessment processes is described before the details of the assessment methods are explained and an evaluation of PBA is made in the context of the PASS PBA principles. **Italic superscripts** refer to the relevant point in Table 1.

## 2 Contexts

### 2.1 National

Nationally the General Medical Council (GMC) is responsible for the setting the outcomes and standards for medical education. The standards set are outlined within Tomorrow's Doctors (General Medical Council,

2003; 2009b). The GMC also monitor UK Medical Schools by assessing them under the Quality Assurance of Basic Medical Education (QABME) programme to ensure that they are delivering suitable medical qualifications. There is not a national curriculum or national examination, so medical schools are free to deliver the outcomes and standards as they see fit, provided they comply with the GMC's requirements.

One of the main functions of the QABME programme is to compare evidence collected during a structured visit to the standards contained within Tomorrow's Doctors: Outcomes and Standards for Undergraduate Medical Education (2009b), a GMC publication regulating doctors and ensuring good medical practice.

In the undergraduate years the form of assessment adopted by the individual medical school is not formalised by the GMC and can be adapted to the strengths of the different medical schools and individual teachers involved in delivering the programme. The key criteria are to allow students to progress in their learning and understanding. By not giving strict guidelines, the GMC importantly allows flexibility and innovation.

After graduating from medical school junior doctors are given provisional registration with the GMC and enter a 2-year Foundation Programme in one of the Postgraduate Deaneries in the UK. Although this is assessed separately it has implications for the planning of undergraduate teaching.

### 2.2 Institutional

PMS was established in August 2000 with two parent universities: Exeter and Plymouth, which had implications for the Joint Approval and Review Board (JARB) which validates the programmes described in this case study. It is based at multiple sites: Exeter, Plymouth and Truro and works closely with the NHS in the South West (SW) region. The first cohort of medical students started in 2002. The yearly intake is around 200. The majority of graduates stay in the SW Peninsula Deanery for their first jobs post-qualification.

Link to website: http://www.pms.ac.uk/

## 3 Case Study

### 3.1 Aims

The aims of the case study are to:

1. Describe the current curriculum and its assessment strategy with particular reference to the features which make it Programme Assessment (i.e. a current perspective)
2. Describe and reflect on how the Programme Assessment strategy evolved longitudinally and the rationale that underpinned this (i.e. reflection and rationale)
3. Review the strategy with reference to the key headings in the PASS issues paper (see Table 1, and Appendix 1)
4. Develop a focused case study of the progress test drawing on published research data (see Medical Knowledge in Section 3.2.3, and Appendix 2)

### 3.2 Methodology

A detailed case study of the PMS programme assessment strategy was undertaken via an examination of course documentation (including minutes of board meeting discussions, accreditation/review reports, JARB

papers and student handbooks) and interviews with three senior staff members at PMS who were involved in designing the assessment.

### 3.2.1 The PMS curriculum

The PMS curriculum has characteristics which differentiate it from other medical schools and facilitates a PBA approach to assessment. Most medical programmes are based upon a 2-year pre-clinical phase where the emphasis is on academic scientific learning, followed by a 3-year clinical phase where learning occurs in (normally) the hospital environment (Figure 1). PMS wanted to break this mould and articulated a 'two-wedges' approach to the 5-year programme. In year 1 the scientific learning has the 'thick' end of the wedge but there is clinical learning too, but with only the thin end of a wedge (Figure 2). Over the years, the scientific learning decreases from thick to thin and the clinical learning increases from thin to thick. For logistical reasons, students in the first two years are based on the university campus and the final 3 years in local hospitals, but there is an appropriate mix of scientific and clinical learning in all years.

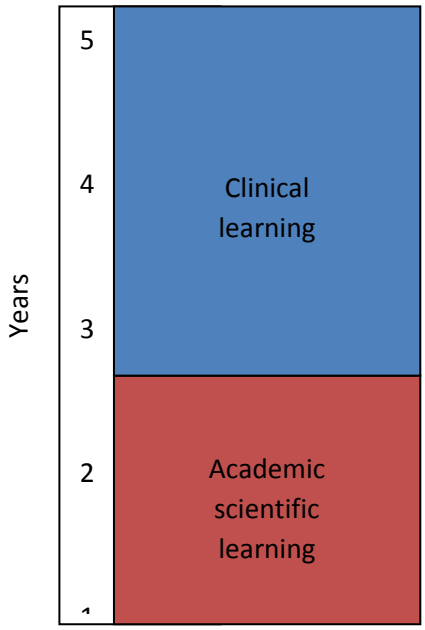


Figure 1: Traditional

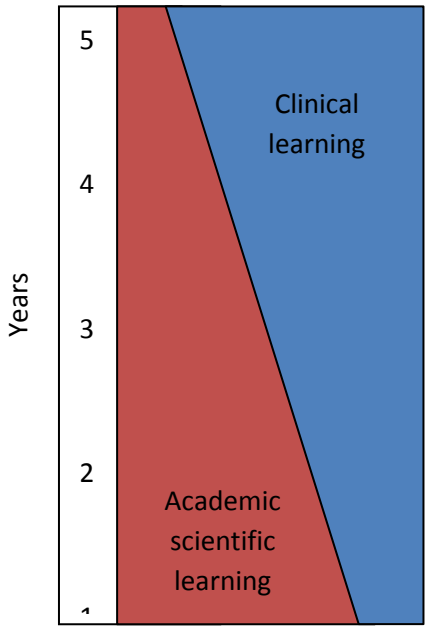


Figure 2: PMS

In years 1 and 2 the learning is divided into 2-week case units which are based around problem-based learning (PBL) sessions and clinical placements, biomedical science tutorials, clinical skills training and lectures. There are 22 case units over year 1 and 2. In years 3 and 4 the curriculum focuses on six 'pathways of care' and students have 9 one-week study units based on a relevant 'trigger case' each week. There are 54 trigger cases over years 3 and 4. In year 5, the students spend 5 six-week blocks in different clinical environments and are guided in their learning by a list of about 180 'indicative presentations'. The important feature is that learning is based around patient presentations rather than academic or clinical 'subjects' such as anatomy, biochemistry, surgery, etc. and this poses challenges for assessment (Figure 2).

A spiral curriculum was developed whereby topics are revisited longitudinally with the aim of reinforcing learning and allowing for increasing complexity (illustrated in Appendix 2 and Appendix 3). Plenty of time was built into the student timetables to enable self-directed learning (SDL) to occur. The GMC requires there to be a significant 'non-core' element in each medical programme, allowing student-selected choice, and this is achieved at PMS through the special study units and the electives.

Appendix 4 shows a curriculum overview from the student perspective, whilst a diagrammatic summary of the curriculum and its relationship with programme based assessment is provided here (Figure 3):

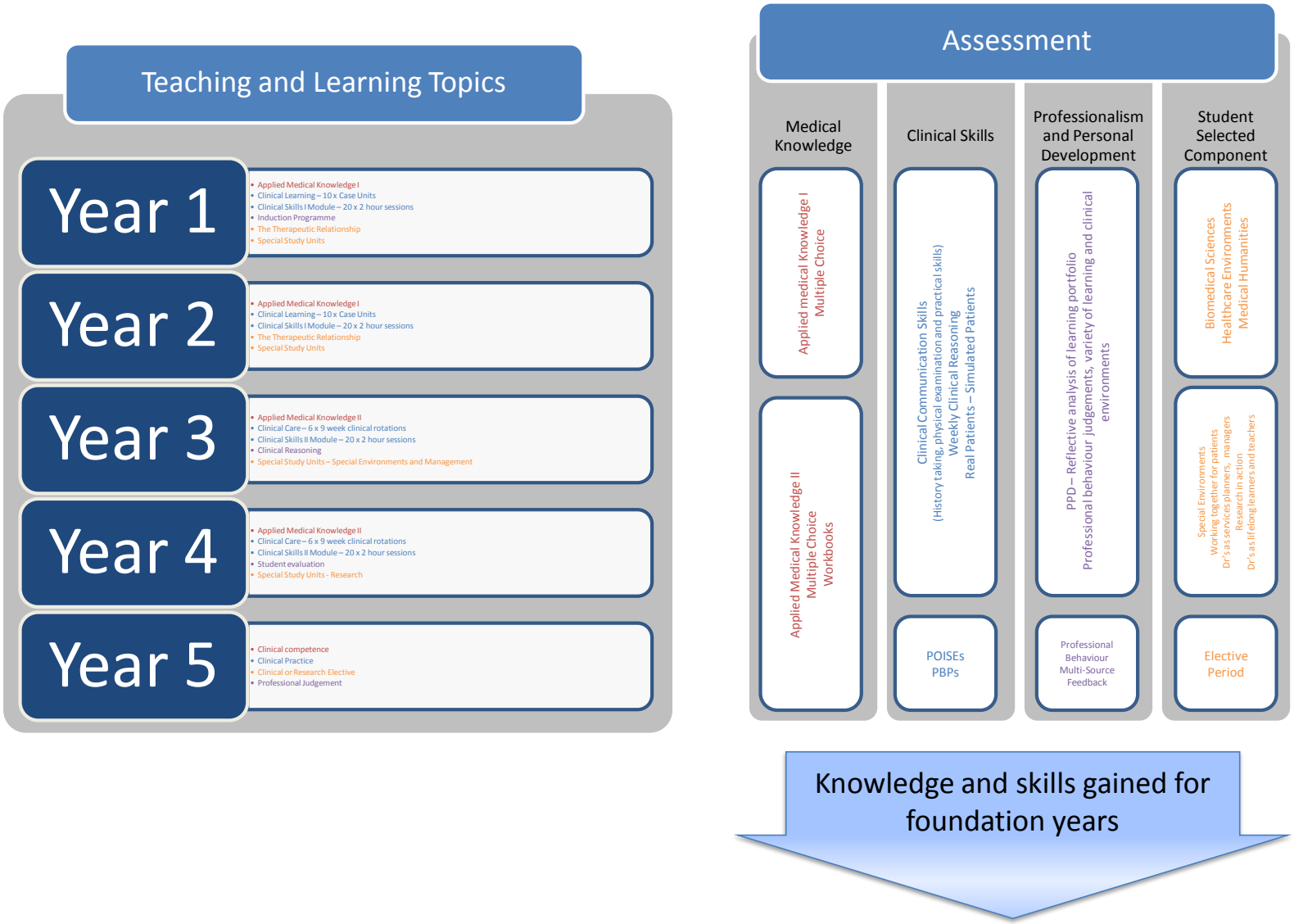


**Figure 3: Relationship between Teaching and Learning Topics and Assessment**

### 3.2.2 Rationale for the development of PBA at PMS

The innovative concept behind using programme assessment evolved at PMS due to the initiative of a number of key staff and the engagement of an external consultant from the University of Maastricht, which was the first European HE establishment to adopt programmatic testing. Additionally, there were a series of visits (~7/year) from the GMC to discuss standards with the course team; 'Tomorrows Doctors' (General Medical Council, 2003; 2009b) and 'Good Medical Practice' (General Medical Council, 2009a) provided a focus for refining the emerging approach to assessment. The programme was approved in three stages, Years 1 and 2, followed by years 3 and 4, and then finally year 5.

A key driver was the belief in the need for an integrated curriculum with integrated assessment. Module descriptors had to satisfy the Plymouth and Exeter Universities Joint Approval and Review Boards[2.5] with Maastricht helping to harmonise the view. In all five years the assessment was designed to address the programme level graduate outcomes. It was central to the philosophy of the programme that learning activities could contribute to *any* of the assessment strands. This principle has not changed since the outset. Methods of standards setting have been critically evaluated and adjusted where necessary (Appendix 5). Interactions assessments[1] were adopted from the Carnegie Foundation programme (USA) and the policy has been to develop an increasing use of assessment in the real environment. The early principles for assessment of the programme included rigorous, robust validity and reliability involving generalizability theory and programme assessment which defied rote learning[1.2]. This complied with the Quality Assurance Agency principles for Higher Education at that time (see Appendix 8 for details), although PMS did not explicitly include fairness (precept 5: equality in relation to equality and diversity (Quality Assurance Agency, 2006)) because they were already enshrined within the values of the whole school[1.6].

The adoption of PBA was facilitated at PMS because the curriculum was designed by an academic team who were recruited to design an innovative approach to training medical students. Staff were appointed from around the world who understood and believed in the principles of problem based learning and PBA. This may have implications for the transferability of this case study into other contexts.

*"Many assessment systems derive from the historical splitting of medicine into disciplines and the pre-clinical/clinical divide in many curricula. Over the past eight years we have developed and evaluated an assessment system in a new medical school where disciplinary boundaries are deliberately blurred and initial medical training is viewed holistically."* (Ricketts & Bligh, 2010).

Ricketts & Bligh (2010) state; *"The assessment scheme needed to follow the same principles of integration and clinical relevance. Because of our desire to assess program outcomes rather than independent 'courses' we kept the final outcomes at the heart of the assessment program. These outcomes were defined as:*

- Applied knowledge of life and human sciences,
- Clinical skills,
- Personal and professional development.

*Rather than regarding these as units of teaching, we took the unusual step of defining them as units of assessment. Each unit of assessment became a 'module' with associated credits, and this allowed us to comply with the usual modular structure of UK undergraduate degrees. The assessment modules did not*

[1] **Interactions assessment** involves analysis of performance-based assessments to enhance qualitative data. For example, data from assessments to measure things such as abilities, attitudes, and personality traits.

*need to link directly to units of teaching, but relevant learning for each assessment module could be found in a variety of contexts and experiences, from small-group tutorial sessions to patient encounters."*

Having established the basic philosophy the principles underpinning PMS assessment were devised:

- Assessment policies, procedures and methods will be informed by best evidence and relevant educational theory
- Assessment policies, procedures and methods will be sensitive to patients' best interests
- Assessment, although necessarily an intermittent process, will be continuous with frequent opportunities for feedback
- Assessment will be cumulative and reflect students' performance across the programme

The current roles of assessment are to:

- Improve student learning by providing the student with appropriate feedback
- Evaluate student knowledge, skills and attitudes
- Provide a mark or grade that enables a student's performance to be established in relation to programme learning outcomes

Additional roles of assessment are to:

- Drive learning
- Identify areas of weakness that require remediation
- Provide evaluation of the curriculum
- Provide evaluation of assessment activities and assessors

### 3.2.3 The current approach to assessment

The five year programme promotes "*desirable approaches to learning and studying through the constructive alignment of curriculum design, strategies for teaching and learning, timetabling and assessment*" (Mattick & Knight, 2007).

Ricketts and Bligh (2010) stated that once the assessment principles were established then a mix of instruments were chosen using *"best evidence and relevant educational theory"* to *"align with the PRISMS model, where assessment will emphasize doing rather than knowing, and continuous methods of formative assessment, such as portfolios, will predominate. The approaches must also provide good feedback to students, and develop in authenticity over the five years of the programme"*.

On the PMS website there is a clear description of the assessment process for all students (potential and current) applied to each of the courses. For example it clearly states that:

"*Assessment is an important part of study, serving the learning process in a number of key ways.*

*The assessment process determines the standard students are working towards and demonstrates the standard students are achieving. Regular assessments allow students to view their progress and development, as well as providing students with regular feedback, and this approach to assessment can highlight any problems a student may have with learning early on*" (Peninsula Medical School, 2010).

In the Bachelor of Medicine or Surgery, assessment involves four modules in Years 1 and 2 and then three in Years 3 to 5. The students have to successfully complete each module before being allowed to progress to the next year of study. The current assessment structure (figure 3) is based on the principle of 'little but often' with quarterly progress tests assessing the whole curriculum (Mattick & Knight, 2007)[1.6]. Competency assessments and an integrated structured clinical examination (ISCE) are used to test clinical

skills. Team-working and professional behaviours are assessed by tutor and peer judgements[3.3] and a reflective portfolio is created. In more detail the four main types of assessment which make up the student experience are:

**Medical Knowledge (MK):**

Students have an MK assessment module in each of years 1 to 5, involving progress tests (Appendix 2) in a multiple choice format. These are designed to objectively assess long-term and functional knowledge. The progress tests are delivered four times per year and questions are drawn from a large pool of thousands of questions. Each test comprises of 125 single-best-answer questions set at the standard of a newly graduated doctor. The aim is to determine how much a student is learning in many areas of the integrated curriculum (scientific basis of medicine, therapeutics and human sciences) rather than their ability to revise or cram[3.1]:

*"A main advantage of this system is that it breaks the link between learning and revision. Progress testing makes it impossible for students to employ a strategy of revising for a particular examination shortly before the examination takes place. Instead students have to acquire information continuously in such a way that it will be available when required. This in turn means that they must continually refresh information they have gained. Since the pool of questions is intended to reflect the outcomes on completion of the course, progress testing has high face validity. It helps make the students familiar with the level of knowledge which is appropriate to the end of the course. Finally, it gives both students and staff a clear idea of student progress on a regular basis, and allows the student to see directly their progress towards achieving the final course goals"* (Peninsula Medical School, 2003)[1.2].

The disadvantages of progress tests include the administrative framework and possible problems for "*students who have always been regarded as high achievers in all their activities. It therefore requires careful briefing of students when they enter into the process"* (Peninsula Medical School, 2003)[2.7].

**Clinical Skills (CS):**

Clinical skills are assessed by a combination of single 'competencies' of increasing complexity through the programme, and two Integrated Structured Clinical Examinations (ISCE), at the end of year 2 and the second at the end of year 4. The ISCE is an adaptation of the better-known Objective Structured Clinical Examination (OSCE) style of assessment. The Clinical Competencies tests take place both in a clinical skills centre setting (in vitro) and in the healthcare setting with real patients (in vivo) and require students to demonstrate acquisition of core clinical skills and their development over time i.e. students demonstrate retention and application of skills and knowledge in a clinical setting[3.1]. It is assessed by a series of in-course 'clinical competencies' with simulated patients in the early years, weekly clinical reasoning presentations (years 3 and 4) and by an ISCE. Unlike the OSCE, which normally consists of a series of stations lasting 5-15 minutes, where a candidate is expected to demonstrate their ability to perform a defined task (history taking and physical examination, technical skills, communication skills, and critical thinking) before moving on to the next station, the ISCE consists of fewer longer stations (30-45 minutes) in which a patient-doctor interaction is assessed including history taking, examination and procedural skills, leading to management of the patient's problem. All candidates undertake the same assessment tasks; these are judged against defined global assessment criteria. Students are assessed on their communication, examination, and procedural skills using simulated patients (year 2) or a combination of simulated and real patients (year 4). In year 5 the curriculum and assessment include practical skills relevant to a newly-qualified doctor (performed under supervision on real patients), Patient Oriented Integrated Skills Examinations (POISEs) which assess history-taking, physical examination and diagnostic

skills with real patients on wards or in clinics, and Patient-Based Presentations (PBPs) where students demonstrate their integrated skills and their understanding of differential diagnosis and patient management including appropriate investigations and therapies (Peninsula Medical School, 2009)[3.1]. These assessments in year 5 are deliberately designed to provide a bridge between medical school and the Foundation Programme assessments.

"*A logbook of clinical skills provides an opportunity to assure acquisition, retention and demonstration of progressive improvement through formative assessment conducted by suitably trained assessors in a variety of clinical settings"* (Peninsula Medical School, 2003).

The examiner assesses the higher levels of clinical skills involving data gathering and communication abilities, interpretation and clinical reasoning along with critical analysis and use of evidence in formulating suitable management options[1.2]. The utility of the assessment is explained in Appendix 6.

**Professionalism and Personal Development (PPD):**

PMS was innovative in specifically developing an assessment strand that concentrated upon the desired professional attributes of doctors, outside their medical knowledge and clinical skills. These attributes are summarised in the GMC's "Good Medical Practice" (2009a) and include such generic skills as ethical behaviour, putting the patient first, identifying own learning needs, and others. The assessment of professional and personal development is based upon two instruments: a series of judgements of behaviour in a variety of contexts, and a reflective analysis of a portfolio, leading to identification of learning needs.

Professional judgements assess behaviours in various settings and are judged by:

- Clinical Skills tutor
- Community supervisor/clinical teacher
- PBL facilitator (Phase I)
- SSU supervisor
- Clinical block supervisor/coordinator (Phase II)
- Clinical block team (Phase II)[3.3]
- others[3.3]

The judgements are becoming more specific to each context (personal communication Ricketts, 2010), because not all aspects of professional behaviour can be observed in every context.

PPD is one of the five longitudinal themes in the PMS curriculum. The assessment weighting increases throughout the course[3.8]. The framework for Good Medical Practice (GMC) essentially underpins these:

- Reflect on and evaluate own academic and clinical performance
- Demonstrate high standards of altruistic, ethical and team-based practice
- Apply the principles of audit and scientific research
- Manage your own time, workload, uncertainty and stress
- Demonstrate realistic personal development plans based on self-awareness, reflection and appropriate CPD
- Be willing to be involved in the teaching of others and leadership and change

The portfolio is submitted by the student to their academic tutor twice a year. The academic tutor assesses summatively two reflective commentaries (portfolio analyses) per year. Appendix 7 contains a list of sample portfolio material[3.5].

**Student Selected Component (SSC):**

The student-selected component of the curriculum is made up of a series of Special Study Units (SSUs), normally of 3-weeks duration, and an elective. A publication style report is produced from research on non-core topics during 2-week special study units (SSUs). Special Studies Units (SSUs) are provided by a large number of people involved in many aspects of health care across the SW peninsula, and provide students with a wide range of experiences. In years 1 and 2 there are 3 themes: Biomedical Sciences; Healthcare Environments; and Medical Humanities. In years 3 and 4 there are 6 themes: Special Environments; Working together for Patients; Doctors as service planners as managers; Research in action; Doctors as lifelong learners and teachers; and Medicine, an art? The student-selected component of the final year is the elective period which is at the start of the academic year for all students.

The SSUs are the non-core part of the curriculum and do not easily fit within the programme-based assessment framework because of the huge variety of student-selected units. Therefore, SSU assessment at PMS requires a highly structured report (2000 words), presentation, portfolio or other authentic method applicable to the unit designed to promote critical thinking, communications skills of information presentation, clear scientific writing and style, and scientific citation[3.2]. While there has been some attempt at assuring consistency across the programme for SSUs (Coombes et al., 2010) they are essentially conceived as complementary to PBA .

### 3.2.4 Documentation and information for students

One of the concerns that educators often express when considering adopting PBA relates to the need to explain the complexities of an unfamiliar and complex system to new students and staff. At PMS students receive a Guide to Undergraduate Modules and Assessment which clearly lays out the principles and strategies for formative and summative assessment, module record sheets, sample core case studies, the roles and rationales for clinical competencies, Integrated Structured Clinical Examination (ISCE), clinical skills, Personal and Professional Assessment (PPD), reflective portfolio evaluation, special study module descriptors, marking and grading descriptors and judgement rationales at PMS[1.3].

The role of feedback is also clearly stated within the PMS website:
"*Feedback is a very important part of the assessment process within the School and formative and summative assessments are used to help provide students with continuous feedback. This is provided in different ways from assessors, tutors, peers*[3.3] *and small groups, and can help students identify strengths as well as areas requiring improvement* (Peninsula Medical School, 2010)."[1.3]

PMS strives to help students understand the assessment process, initially by developing an assessment manual[1.3] (Peninsula Medical School, 2003) which is also important when dealing with student appeals. The manual is a public working document with minor changes every year, approved at various stages including specialist assessment groups, medical programme committee, the college education committee and the JARB[2.5]. The manual is now being converted to 'student speak' with frequently asked questions in an attempt to get the students to engage more thoroughly[1.3].

The staff development programme is well supported by, and integrated into, local provision offered throughout the region by various organisations such as the NHS Trusts, GP practices as well as in the Universities staff development structure (General Medical Council, 2006). The School has a very detailed programme of staff training for specific roles and assessments. The staff development budget supports scholarly development and conferences and utilises courses run by the Graduate School, both Universities and the NHS where appropriate (Prior, 2010).

### 3.2.5 PASS Issues

Various challenges with PBA have been identified through the PASS Project (WP3 – Issues: Programme Assessment Strategies www.pass.brad.ac.uk ) and this section of our report aims to address those specific issues in relation to this case study. Table 1 identifies what the PASS project sees as:

- Current problems with modular assessment
- Issues associated with adopting PBA
- Benefits of adopting PBA

We have identified throughout the report how we see these reflected in the PMS approach to assessment (shown by the use of numeric superscripts). Here we summarise these in the second column of the table.

| **Problems the PASS project is trying to address/overcome (WP3):** | **Evidence from PMS case study which addresses this:** |
|---|---|
| 1.1 Failure to ensure the assessment of the espoused programme outcomes. | • Focus on achieving assessment of programme level outcomes |
| 1.2 Atomisation of assessment focussed, at the micro-level, on what is easy to assess; failure to integrate and assess complex, higher-order learning; the sum of parts not making the intended whole. | • Proved integrated learning at a higher level<br>• Integrated assessments drawing on material across the curriculum, such as Progress Testing and ISCE's |
| 1.3 Students and staff failing to see the links/coherence of the programme. | • Few assessment methods<br>• Assessment strands consistent through programme<br>• Guide to Undergraduate Assessment for Students<br>• Assessment Technical Manual for Staff<br>• Managed Learning Environment (EMILY )<br>• Appendix 9 |
| 1.4 Modules are too short to focus and provide feedback on slowly learnt literacies and/or complex learning. | • Figure 3 is a remedy for this<br>• All modules are year-long |
| 1.5 Students and staff adopting a 'tick-box' mentality, focussed on marks, engendering a surface approach to learning. | • Progress tests sample across the curriculum – students do not know possible test questions |
| 1.6 Tendency to assume that 'one size fits all' when it comes to module assessment (with implications regarding cultural differences and students with disabilities). | • Evaluation of all assessments in relation to gender, ethnicity and disability<br>• Research to check it is not discriminatory<br>• Appendix 9<br>• Addresses locational differences |
| 1.7 Overuse of (institutional) rules focused on standardisation that impede innovative development of progressive and integrative assessment. | • Ability to write own rules subject to university approval<br>• Possible future changes whereby students do not have to do an assessment if reached a certain standard (potentially complex to administer)<br>• Future simplification |
| 1.8 Too much summative assessment, leading to overworked staff, and inability to 'see the wood for the trees' in the accumulated results. | • Integrated assessments may reduce load, because no 'end of block' testing<br>• Efficiency drivers |

| | |
|---|---|
| 1.9 Questionable statistical practices. | • Appointment of full-time psychometrician/assessment analyst<br>• Started off with sound practice in relation to Appendix 1<br>• Changes seen in Appendix 5<br>• Use *Generalisability Theory* |
| **Potential issues identified by the PASS project (WP 3)** | **Evidence from PMS case study which addresses this:** |
| 2.1 Student (lack of) motivation to undertake solely formative work leading to loss of the potential benefits of coursework, and possible reduction in student engagement and lack of feedback on progress. | • To prevent this PMS has a policy of "frequent look, rapid remediation" (Ricketts & Bligh, 2010) |
| 2.2 Persuading, and perhaps finding resources for, module/unit leaders to work together to take a programme view. | • Learning is integrated, there are no real 'module leads'<br>• All modules are modules of assessment, not teaching |
| 2.3 Lack of a core framework of modules within some programmes to provide a common student learning experience on which to base integrative programme based assessment. | • Core and SSUs<br>• Large core means this is not an issue<br>• Core is defined by required outcomes |
| 2.4 How to assess integrated learning from across units/modules. | • No isolated units, see Figure 3<br>• Downing et al. (2006)<br>• Learning embedded into assessment Appendix 9.<br>• Progress test based upon graduate-level knowledge across the whole of medicine |
| 2.5 Credit structures linked to units/modules and assessment regulations. | • Module descriptors had to satisfy both Plymouth and Exeter Universities Joint Approval and Review Boards<br>• Modules are assessment modules, not teaching modules<br>• GMC sets the outcome standard rather than the process of achieving them |
| 2.6 Possibly implications for academic year structures. | • Designed in phases from the beginning<br>• Now all year-based modules |
| 2.7 Ending up with 'high-risk' assessment. | • Use continuous assessment almost everywhere<br>• Progress tests |
| **Potential benefits identified by the PASS project (WP3), if successful:** | **Evidence from PMS case study which addresses this:** |
| 3.1 Integrated learning and assessment at the meta-level, ensuring assessment of programme outcomes. | • Basis of the whole programme<br>• Integrated learning<br>• Integrated assessment, such as progress test |
| 3.2 Students taking a deep approach to their learning. | • Some evidence from Peninsula research (Mattick et al., 2004)<br>• Advice to students (but cannot force them to adopt good learning strategies)<br>• EMILY |

| | |
|---|---|
| 3.3 Increased self and peer-assessment, developing assessment literacy. | • Peer and self-assessment used within the spiralling curriculum<br>• Student feedback on formative progress-test style questions<br>• Students write questions as part of 'consolidation weeks' in years 1 and 2<br>• EMILY |
| 3.4 Greater responsibility of the student for their learning and assessment, developing self regulated learners. | • Appendix 5<br>• Self directed learning is core to the curriculum Appendix 5 |
| 3.5 Reduced summative assessment workload for staff (especially connected with QA). | • Progress testing can reduce total load but concentrates it into a number of large scale events |
| 3.6 Possibly smaller number of 'specialist' assessors leading to greater reliability. | • Cannot be small numbers due to programme so reliability achieved through training<br>• Multiple sampling across assessors for most modules, so not dependent on single 'module lead' |
| 3.7 Possible greater opportunity to allow for 'slow-learning'. | • Progress tests<br>• Practice tests on EMILY<br>• Remediation |
| 3.8 Possible link to, and enhancement of, PDP, leading to greater preparedness for CPD processes after graduation. | • Reflective portfolio analysis integral from year 1<br>• Preparation for Foundation years in hospital |

**Table 1: Problems/issues we are trying to address/overcome, major problems/issues in what we are trying to achieve and potential benefits, if successful.**

In addition, Appendix 1 contains the 'questionable statistical practices' which underpin modular assessment according to Rust (2007) which need to be taken into account when reflecting on the potential advantages of PBA.

## 4 Ongoing evaluation and implications for Higher Education

*"The biggest challenge facing any assessment development team is that the system will necessarily be devised by a small number of staff, but then tested to destruction by a large number of students."* (Ricketts & Bligh, 2010)

Longitudinal, regular review and revision of assessment (Appendix 7) are built into PMS quality processes. The current thinking about the future is to simplify assessment as much as possible and provide more flexibility in the assessment system. Important catch phrases are being adopted with the aim of promoting a more individualised approach to education and training: "Frequent look, rapid remediation" is the emerging philosophy; "Simple but not simplistic" and "Rigorous but not rigid" is the vision for the future (Ricketts & Bligh, 2010).

The current move towards validity[2.1] where assessment has to be authentic, practicable, reliable but also cost effective relates to the idea of individual training which allows students to progress at different rates[3.7] and potentially allows competence to be rewarded earlier in future with reduced assessment loads[1.7].

In addition to the assessment review practices adopted by PMS, GMC and external examiners, the College has appointed a full-time assessment analyst/psychometrician to undertake ongoing evaluation of the assessment instruments. This supports the aim of the school to understand and evaluate the performance of students, assessment instruments and assessors. The school has recently moved towards a framework in which the application of Generalisability Theory[2] is used to evaluate all assessments. This use of relatively advanced psychometric approaches provides evidence that can be used to feed-forward into improvements that are acted upon by the school. This highly professional and research informed approach to assessment has allowed PMS to become a respected leader in the field of medical assessment.

In researching and writing this case study we have been aware that there are several unique or very unusual factors which, in combination, made PBA an achievable solution for PMS. The question therefore arises can these principles and practices be transferred to other contexts?

We would argue that other Medical Schools (working under the same national (UK) professional curriculum) might find aspects of these practices achievable although the wholesale adaptation of the curriculum would be challenging for many. Other disciplines might be encouraged to take aspects of this approach and pilot them. For example, the idea of a progress test which uses a knowledge base relating to the whole programme might well be transferred into other science disciplines and the idea of an ongoing portfolio of professional and personal development which is reviewed twice a year throughout a programme might be adopted by other professional subjects (e.g. Engineering; Education) or in the Arts and Humanities.

In conclusion, it is likely that individual disciplines may benefit from *selecting* from the ideas in this case study. One implication of this is that the PASS project needs to consider how this case study is best disseminated and what sort of development opportunities might emerge from this report.

[2] **Generalisability theory** is used to determine the reliability (i.e., reproducibility) of measurements under specific conditions. It is particularly useful for assessing the reliability of performance assessments.

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# Appendix 1

**Statistical practices**

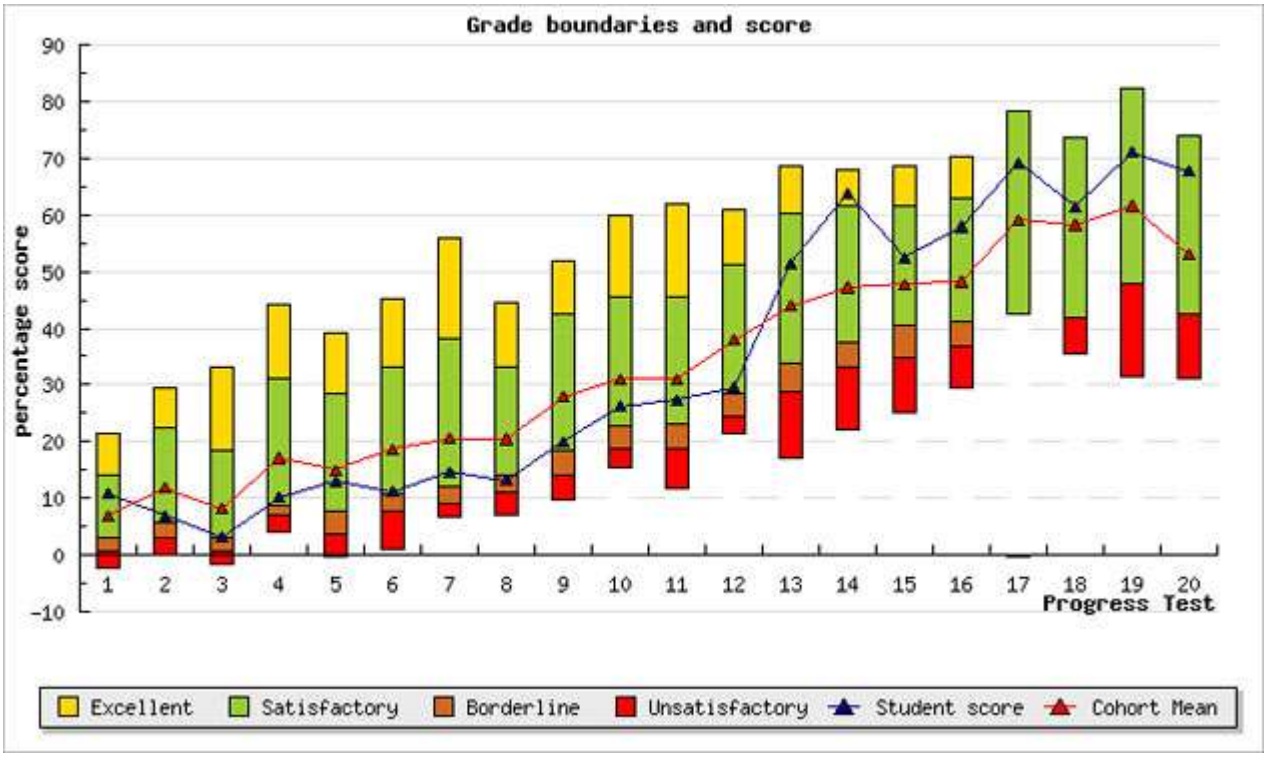
There are a number of questionable statistical practices[1.9] associated with modular assessment (R(Rust, 2007) which underpinned the rationale for PBA at PMS. These include:

- The fact that, usually, outcomes judged against different criteria are then aggregated together into one single number/mark which obscures the differing levels of attainment against each.
- Some marks may be what Sadler calls transactional and/or bestowed credits & debits (Sadler, 2009) – e.g. marks for attendance or penalties for something that has not been done – and have nothing to do with judgements of knowledge, skills or abilities.
- The fact that these scores/marks for individual assignments are then added to others from other assignments, and further aggregated, and then this process is further repeated with scores/marks from different modules. This is done regardless of what they were assessing (and is essentially adding apples to pears) and regardless of what the range of marks were in any given case. These practices are statistically indefensible.
- These practices also operate ignoring what we know about the distortion of marks by the type of assessment (e.g. students are known to be more likely to score more highly on coursework than in examinations) and the actual subject discipline/s studied (Bridges et al., 2002; Yorke et al., 2000). Maths students, for example, are more than three times more likely to get a first than history students, and this is simply because good work in maths can get 100% while good work in history may only get 72% but the central university system will treat these marks in exactly the same way, regardless of this fact.
- And it also well documented that the idiosyncratic institutional rules can cause up to a degree classification difference with the same set of student module outcomes (e.g. Armstrong et al., 1998).

## Appendix 2

**Progress Tests**

Students receive clear feedback with their percentage score and grade for each test, mean percentage for each test for their current year and a progress graph (Figure 4) which plots their performance over the duration of the course. (Peninsula Medical School, 2010)




This graph shows the progress of a student who has completed all 5 years of study and has 20 Progress Test results.

**Figure 4: A sample student's progress graph**

## Appendix 3

**Spiral curriculum: an example for Core Clinical Skills**

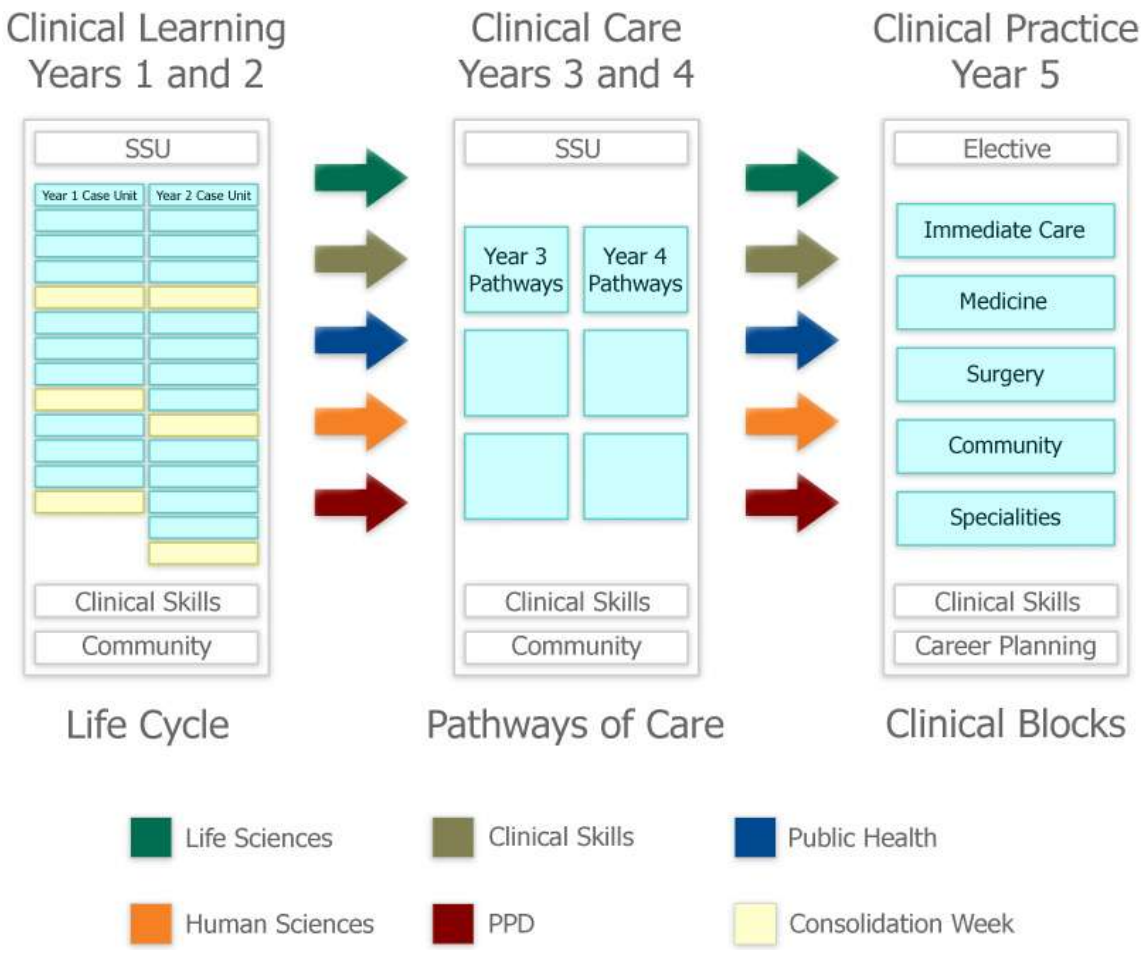



**Figure 5: The spiral curriculum**

(Peninsula Medical School, 2010)

## Appendix 4

**Curriculum Overview from the student perspective**

Seventy percent of the undergraduate BM,BS degree programme is "core", providing essential knowledge and skills whilst 30% is made up of Special Study Units, which allow students to select areas of interest to study in depth.

**Years One and Two:**
Year one of the BM,BS degree begins with a two-week Induction Programme designed to introduce students to the main teaching, learning and assessment approaches within the curriculum. The first two years then lay the scientific foundations for the future years of the course, ensuring that students learn science within a clinical context. The programme reflects the need for doctors to adopt a socially accountable approach to their work and to understand the human and societal impact of disease, as well as the community-wide context of contemporary health care provision.

The curriculum is structured around the human life cycle:

- First year students study human physical and psychological development from birth through to death.
- Second year you revisit the human life cycle, this time with an emphasis on disease, pathological processes and the psychological impact of illness.

In a typical week in the first two years, a student might expect to attend four plenaries, undertake a placement in a health care setting in the community, engage in one or two Problem-Based Learning (PBL) tutorials and discuss the strengths and weaknesses of a research paper[3.2]. There would be sessions in the Life Sciences Resource Centre with clinical and communication skills training, involving anything from learning to examine a system of the body, to receiving a patient history or suturing a wound.

In the first two years the curriculum is based around Problem-Based Learning (PBL). Groups of 8-9 students meet 3 times during each 2 week series of clinical cases, following the human life cycle. Between meetings students undertake research on all aspects of the case from the biomedical, public health, human science and professional points of view. What the students do in the Life Sciences Resource Centre, the Clinical Skills Resource Centre and on Community Placement will, if possible, relate to the PBL case study so that they learn about the science and art of medicine in a clinical context.

Large group teaching sessions regularly happen for each year group and these plenaries focus on specific subjects relevant to case studies, often with external experts. Students are expected to take responsibility for their own learning with extensive support and direction by Academic Tutors and other School staff. It is particularly important in medicine to prepare students for a lifetime of learning in a clinical environment.

The Life Sciences Resource Centre introduces students to, and develops their knowledge of, the structure and function of the human body. Student understanding of anatomy is developed via input from patients, living anatomy and medical imaging (X-rays, magnetic resonance imaging and ultrasound). Virtual multimedia methods and models support student learning for all the biomedical sciences.

Students learn clinical and communication skills such as gathering information, carrying out physical examinations, conducting patient and family interviews, developing diagnostic skills and performing a

variety of practical procedures (injections, venepuncture and basic life support). Interaction with patients in a variety of situations allows students to learn and improve communication skills whilst understanding the needs of individual patients, physically and psychologically.

Extensive exposure to real patients, disease and illness in clinical settings underpins the development of clinical reasoning so that students develop their ability to think and act like an expert in the clinical environment. Community placements in the first two years enable students to:

- Experience health care as it is delivered in the community.
- Learn from patients about the breadth of diseases and health problems in a community and the effect of social and environmental factors on disease.
- Observe the multi-professional nature of medicine and importance of the health care team.
- Learn with and from experts in the health care community including doctors, nurses, social workers and midwives.

Special Study Units (SSUs) involve working with providers from the NHS, University staff and the community in a wide range of disciplines to pursue areas of particular interest. With more than 200 options, SSUs provide a challenging and stimulating way to develop critical thinking, scientific and analytical skills in students[3.4]. During the first two years, each SSU takes place over a two or three-week period.

Options in the first two years are grouped into three themes, Biomedical Sciences, Healthcare Environment and Medical Humanities.

**Years Three and Four:**
Students rotate through a series of hospital and community placements in Years 3 and 4 (Exeter, Plymouth and Truro), which provide extensive experience of a wide range of clinical settings. The two-year programme is divided into six “Pathways of Care”: Acute Care, Ward Care and Integrated Ambulatory Care are delivered in year three and Acute Care, Palliative Care/Oncology and Continuing Care in year four.

Student learning is patient-centred and aims to develop problem solving skills and clinical knowledge, whilst exposing students to a wide array of clinical experiences. Knowledge in the basic and human sciences builds upon the clinical and communication skills acquired in years 1 and 2 in the protected environment of the Clinical Skills Resource Centre and other facilities of the Peninsula Medical School. Basic and clinical science skills are further developed by placements, meeting patients at home, in general practice, in acute and community hospitals and interacting with health care professionals in their working environment. This means first-hand experience of how the NHS works as a team to deliver patient care.

Student learning during each pathway is supported by a study guide, which develops knowledge of common medical conditions by encouraging students to work through a series of clinical problems to build up knowledge, clinical reasoning and analytical skills. One day each week is devoted to plenaries, seminars, workshops and small group sessions to build on previous learning and to help integrate students’ scientific and clinical knowledge. Structured Supported Learning sessions (SSLs) and Clinico-Pathological Conferences (CPCs) help students understand the key concepts and knowledge that relate to each pathway.

SSU options focus on specific clinical environments and management and in Year 4 students have the opportunity to learn more about the research process, through a longer attachment to one of the School's research teams. A teaching and learning skills SSU can run alongside student clinical work.

**Year 5:**
The student selected component of the curriculum takes the form of a nine-week elective period, enabling students to arrange a clinical or research placement in the context of agreed learning objectives. An intercalated degree provides students with the opportunity to explore another discipline at degree level, to add breadth and depth to study.

Year 5 revolves around learning the job of medicine and starts to develop student understanding of principles of practice in the NHS via a series of apprenticeship attachments in Plymouth, Exeter, Barnstaple, Torbay and Truro. Student self-directed learning is supplemented by a portfolio of "indicative presentations", encouraging integration of scientific and clinical knowledge, expanding and deepening on Years 3 and 4. Students further develop their analytical skills in interpreting diagnostic tests and initiating management plans.

The emphasis in year five is on the practical implementation of what has been learnt during Years 1 to 4 and is the final preparation for medical practice. Students experience working as part of the health care team in the clinical environment. An elective enables students to experience medicine in an entirely new social and cultural environment and it may involve a clinical or research placement, or both. Some students opt to explore practice medicine in mission or government hospitals in developing countries whilst others arrange elective placements within the UK, for example, with a GP.

## Appendix 5

**Changes in assessment at PMS between 2004/5 and 2009/10**

2004-5

- The grading criteria changed for SSUs to simplify the system and to prevent students strategically avoiding some assessments.
- Change in philosophy to make students greater participants in their own assessment[3.4], and the assessment of their peers[3.3]. In Phase 3, as students move toward their postgraduate training, the philosophy will move more towards appraisal than pure assessment.
- Changes in assessment to reflect increased practice-based work.
- Development of Year 5 programme determined by outcomes for assessment tools.
- Year 5 credits changed from 180 to 120 altering the whole programme from 660 to 600 credits.
- Development of assessment tests for PPD and progress tests.
- Use of SWANDS approach for assessing students with dyslexia.
- Change from academic mentors to academic tutors.
- Removed 'doubtful' category so that students are graded as 'satisfactory' or 'unsatisfactory' depending on their performance in the last two 2 tests relative to the following year cohort.

(General Medical Council, 2004; Peninsula Medical School, 2004a; 2004b; 2004c; 2004d; 2004e; 2004f; 2005a; 2005b; 2005c; 2005d; 2005e; 2005f; 2005g)

2005-6

- An additional end-of-year knowledge test was introduced for year 1 students.
- A modelling exercise was undertaken to help define the pass/fail boundary in year 5, resulting in a system where the pass mark is no longer norm-referenced as it is in years 1-4. The pass marks have been set at 35.0, 37.5, 40.0 and 42.5 for the four tests in year 5, possibly adjusted according to test difficulty.
- The number of attempts to pass each clinical competency was limited to three, with no effect on student success, but has been easier to organise and taken some pressure off both space and staff.
- An ISCE was introduced for the Year 4 cohort.
- In years 3 and 4 the pattern of weekly judgements proved difficult to manage so the number of assessments have been reduced, focused on clinical interactions, with a 'Borderline' grade.
- SSUs restructured as 4 longer SSUs in Years 1 and 2.
- Academic progress meetings called 'progress reviews' rather than 'learning health-checks'.
- Elective attachment formerly assessed.
- Introduced summative 'progress barriers' at Years 1 and 3.
- Benchmarking video provided as a training exercise for all ISCE examiners to adopt a more standardised approach[3.6].
- Progress tests seen to be producing consistent trends[1.9].
- GMC suggested a review of how the quality and consistency of judgements are assured in relation to PPD and to ensure that learning outcomes for inter-professional learning are clear and appropriate for students and teachers[1.3].

(General Medical Council, 2006; Peninsula Medical School, 2006a; 2006b; 2006c; 2006d; 2006e)

2006-7

- A 'second look' test was introduced for students who had a final 'Doubtful' aggregate grade for AMK at the end of year 2.
- In years 3 and 4 some of the clinical competencies (especially physical examination) were performed in the clinical environment with real patients, rather than in the Clinical Skills Resource Centres. In year 3 they are formative, as the first one of year 4.
- The real-life examinations included a specific assessment of the student's behaviour towards the patient replacing many of the PPD judgements undertaken in years 3 and 4. Even though the clinical examination may be formative in some cases, the behaviour judgement will be summative.
- The preparation of an approved elective proposal became a component of the PPD assessment in year 4.
- Three new assessment modules were approved for year 5: Applied Medical Knowledge 3, Clinical Capability, and Professional Practice.
- The Assessment Code of Practice and the Assessment Technical Manual were updated.

(Peninsula Medical School, 2007)

2007-8

- The 'Borderline Group' approach to standard setting was introduced.
- All modules converted to year based modules.

(Peninsula Medical School, 2007)

2008-9

- The publication of a revised 'Tomorrow's Doctors' by the GMC led to a review of curriculum including assessment, and little needs changing. PMS has started to move to a Generalisability Theory framework for all assessments.
- The ISCE has developed into a two-stage test and the student performance over the whole diet of cases is now used to make the decision about student progression, resulting in a more reliable decision and is in the interest of patients. It has, inevitably, led to a slightly higher failure rate.
- More specific assessment criteria have been developed for personal development and the requirements of professional behaviour, so that student and assessor attention is drawn to the particular needs of each environment.
- The assessment area on EMILY was reorganised to make navigation easier and to collate all information in one place in the hope of improving communication with students about assessment matters. In addition, Student Parliament developed more student-centred guides to assessments and staff visited all localities to ensure that year 5 BMBS students are better informed about assessment issues affecting them.
- A 'Merit' award was introduced at graduation. Students now graduate with a BMBS (Distinction), BMBS (Merit) or BMBS.

(Peninsula Medical School, 2009)

2009-10

- The Professionalism team revised the assessment criteria for the reflective portfolio analyses to show clearer progression between successive years of the programme.
- The Student Selected Component Committee are revisiting the way the SSU's are assessed in years 3 and 4 with a view to developing a more integrated approach. Students who successfully pass the

first phase will normally be exempt from the second phase (using the modified Angoff method). To pass the complete ISCE students must achieve a combined mark over the two phases which is greater than the combined passing score and achieve a global judgement of at least Satisfactory in MORE THAN half the total stations. Both phases will be given equal weight.

- All assessment data is now analysed in a Generalisability Theory framework in order to better understand sources of variation in assessment results and to give better estimates of standard errors of measurement.
- The Technical Manual now clarifies that the Medical Knowledge Assessment Panel may choose to defer a confirmation of this grade if it has insufficient data (results of at least 3 tests to confirm the grade).
- There will no longer be a separate End of Year 2 test for those students who end the year on a Doubtful cumulative grade.
- The manual now confirms that for Years 1 – 4 PA, students will be assessed on their familiarity with and ability to organise their portfolio and plan the portfolio analysis in the light of the professional values and behaviours outlined in Good Medical Practice (2006) and Medical Students: behaviour and fitness to practice (MSC & GMC, 2007).
- There had been concern that practically it was not always possible for students to submit a draft of their portfolio four weeks in advance of their progress meeting with their Academic Tutor. This has been amended to state that students will have the opportunity to submit a draft portfolio at a previous meeting with their Academic Tutor.
- Professionalism Judgements for Year 5 are all summative even though other assessments in the 5th block may be formative.
- In Year 5 the timeframes surrounding remediation for PBP and POISE have been outlined. Students should seek remediation prior to their second attempt. This should normally include a meeting with the Clinical Skills Co-ordinator. Students should normally leave a period of at least 7 days between the first and second attempts to allow successful remediation. Students are now reminded that PBP assessments are continued in the 5th block and are compulsory but will normally be formative unless they are being used as second attempts at any failed assessment. Failure to participate will normally be reflected in an unsatisfactory Professionalism Judgement.
- The Technical Manual continues to state that all assessment forms must be submitted by the first Wednesday of the following block, but now notes that late submission of assessment results will lead to a grade of Unsatisfactory.

(Peninsula Medical School, 2009)

## Appendix 6

**The utility of approaches to clinical skills assessment at PMS**

Using the following descriptive formula:

**$U = R_w \times V_w \times A_w \times E_w \times C_w$(Van der Vleuten, 2000)**

the utility (U) of the assessment promises to be quite high. The adverse effect on reliability (R) of the variability of examiners could be reduced through a programme of testing that is spread over time and with multiple samplings. Repeated assessment of the same skill also promises to chart retention and progression towards mastery of the skill. Validity (V) of the assessment will be enhanced by being undertaken in the clinical placement (or in as close a simulation as possible). The acceptability (A) of the testing to students and assessors depends in part on there being a cohort of suitably trained and motivated assessors with sufficient time available. The time required might be controlled by selection of skills that do not require excessive time in preparation or performance (e.g. venepuncture, blood pressure measurement). The educational impact (E) of the assessment will be enhanced by requiring completion and satisfactory performance of the identified skills as a part of progression, although any individual assessment is formative with the opportunity for feedback, correction and repetition. Finally cost-efficiency of assessment should be limited given that these procedures will be part of normal clinical practice, generally only the time required by the assessor may need to be considered. Exceptions to this might involve resuscitation skills and highly invasive procedures (e.g. lumbar puncture) which would not lend themselves to the proposed assessment.

(Peninsula Medical School, 2003)

## Appendix 7

**PPD portfolios: an example**

- More than 20 professionalism judgements
- 4 portfolio analyses
- 4 academic tutor and self-assessment grades for the portfolio analyses
- 4 personal learning plans/contracts
- Clinical competency assessment sheets
- 1 ISCE feedback sheet
- 8 progress test results
- SSU reports and assessment feedback forms
- Other documents the student might like to include e.g. videotapes of consultations with simulated patients, peer feedback sheets for communication skills etc.

## Appendix 8

**Role of assessment**

- Extract from Undergraduate Medical Programme Approval Document (Peninsula Medical School, 2002)

PMS acknowledges the many roles of assessment including:

- Certifying competence and allowing progress
- Providing individual student feedback on progress
- Providing information about breadth and depth of curriculum
- Ranking students
- Providing evaluation of the curriculum
- Driving learning as informed by clinical practice
- Identifying areas of weakness that require remediation

PMS acknowledge the particular role of assessment to certify junior doctors fit for practice in accordance with the regulations of the national licensing authority, the General Medical Council.

Principles of assessment

The principles that underpin assessment at PMS include:

- Use of criterion referenced standard setting methods where relevant including modified Angoff, modified Rothman and Cohan
- Norm referencing to determine the passing standard will also be applied where appropriate i.e. to the Progress Test
- Policies and procedures to be informed by the best evidence
- All assessment material must be derived from curriculum blueprints
- What is to be assessed must dictate what assessment tools are used
- All assessment activities must provide relevance, cognisant of the major curriculum outcomes of clinical competence and professional competence
- Assessment should be enjoyable
- There should be a generous use of formative assessment. These must:
    - reflect summative formats
    - reflect for students the breadth but more importantly the depth of the curriculum
    - be able to identify weakness and provide pathway toward remediation (will be used summatively in some cases)
    - be more unit/block based
- Summative assessment must:
    - not overly assess
    - assess mastery or competency of core material i.e. pass/fail (also reward excellence in relevant assessments)
    - contain a mixture of continuous, cumulative and end point assessments

- contain a number of key barriers to progress points
- maximise reliability i.e. fairness particularly with barrier to progress assessments
- maximise principle of multiple sampling
- also maximise validity and be 'doable'
- be assessment module based
- be integrated where possible
- also assessed professional development including attendance at key activities

The performance of assessment activities and assessors must be evaluated

All assessment instruments will be validated and end point assessments will include external assessors.

Assessment Definitions

*Summative assessment*

Final assessment of performance that occurs at specified places in the curriculum and is used to calculate a final grade upon which determination of progression is made.

*Formative assessment*

Assessment of performance which incorporates feedback to an individual or group. Methods may be identical to those used for summative assessment, but results do not normally contribute to the final grade or determine progression.

*Progressive Assessment*

Assessment of distinct units of material that have their own value (also provide formative feedback on progress)

*End point Assessment*

Assessment of a large amount of integrated material at the completion of a whole 'module' (if these assessments are the only assessment of a module or are contained within an AND rule of pass then they are also called *barrier.)*

*Cumulative Assessment*

Assessment of small units of activity that on their own have no value until they are all added together at the end e.g. collection of 8 clinical supervisor reports over a year. Usually involves multiple sampling of multiple observations by multiple observers

*Criterion Referenced Assessment*

Assessment which measures performance according to a standard or criterion for acceptable performance.

*Norm referenced Assessment*

Assessment in which performance is judged relative to the performance of others. *Reliability*

The degree to which an assessment method produces results which are consistent (same results are reproduced over time and truly identifies true performance)

*Validity*

The degree to which an assessment method measures what it is supposed to measure. *Face Validity*

The degree to which an assessment appears to be valid at face value.

*External Validity/Generalisability* (predictive validity) (North Americans also use 'Extrapolation')

The degree to which an assessment method produces results which can be generalised across different contexts.

*Content validity*

The degree to which an assessment method contains a sample of content which is representative of the total content being assessed. (Arises from a blueprint)

*Professional Authenticity*

The degree to which the assessment method measures actual behaviour as opposed to cognition. Use Millers pyramid of Validity.

## Appendix 9

**Guidance for Students on report writing**

The Report should have four sections, all clearly marked out. These sections will indicate the student's ability to understand the background to the subject, to pose a question, to answer it via evidence or observation, and to understand the answer obtained.

- ***Introduction****:* A succinct description of the background to the subject area of the SSU, with appropriate references. The student should use his or her personal insight to summarise the material, which could be provided, rather than merely repeating material from his or her sources.
- ***Questions and Methods:*** A description of the question posed, with an indication of how the student went about investigating it.
- ***Results and Observations:*** A summary of the observations made by the student, using appropriate presentation techniques.
- ***Conclusions and References:*** Appropriate conclusions drawn from the student's work, indicating what further information would be valuable. A list of references for the report should be provided, using the style indicated in the SSU handbook.

The report, including the student's name, must be submitted electronically via the Managed Learning Environment. Each section should be written in a reasonable font size. Spelling and grammar should be good. Normal School Regulations on plagiarism apply. Students may seek permission from their Academic Tutors for Late Submission if health or other problems arise. Computer crashes or faults, other than network faults affecting the MLE, are not acceptable reasons for late submission as all work should be properly backed up.