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Multiprofessional Faculty Development

Study of the views on teaching and learning within Healthcare qualifications in England

Clare Bentall

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Commissioned by the Multiprofessional Faculty Development team on behalf of Health Education North West London, Health Education North Central & East London, and Health Education South London

Contents

List of acronyms

AA	Audit Assessment
ACAT	Acute Care Assessment Tool
AEP	Association of Educational Psychologists
Adv Dip	Advanced Diploma
AHCS	Academy of Healthcare Science
ARCP	Annual Review of Competency Progression
BA	Bachelor of Arts
BAAT	British Association of Art Therapists
BADN	British Association of Dental Nurses
BADTH	British Association of Dramatherapists
BAMT	British Association for Music Therapy
BAOT	British Association of Occupational Therapists
BAPO	The British Association of Prosthetists and Orthotists
BChD	Bachelor of Dental Surgery
BDA	British Dietetic Association
BDS	Bachelor of Dental Surgery
BIOS	British and Irish Orthoptic Society
BMBCh	Bachelor of Medicine, Bachelor of Surgery
BMedSci (Dent)	Bachelor of Medical Science (Dentistry)
BMedSci (Hons)	Bachelor of Medical Science (Honours)
BMJ	British Medical Journal
BPS	British Psychological Society
BSc	Bachelor of Science
BSc (Hons)	Bachelor of Science (Honours)
CAL	Computer Assisted Learning
CBD	Case-based discussion

Cert HE	Certificate in Higher Education
CEX	Clinical Examination Exercise
COPDEND	Committee of Postgraduate Dental Deans and Directors
COT	College of Occupational Therapists
CS	Clinical Supervisor
CCST	Certificate of Completion of Surgical Training
CSP	Chartered Society of Pysiotherapy
DClin Psych	Doctor of Clinical Psychology
DenTAB	Dental Team Assessment of Behaviour
Dip HE	Diploma in Higher Education
DOPs	Direct Observation of Procedure
DPsych	Doctor of Psychology
EA	External Assessment
EdPsychD	Doctor of Educational Psychology
e-LfH	e-Learning for Healthcare
EM(I)Qs	Extended Matching Item Questions
ES	Educational Supervisor
ESC	Essential Skill Clusters
FD	Foundation Degree
FDSc	Foundation Degree in Science
FP	Foundation Programme
FRSC	Fellow of the Royal College of Surgeons
FT	Full time
FY1/ 2 (F1 / F2)	Foundation Year 1 and 2
GDC	General Dental Council
GIM	General Internal Medicine
GMC	General Medical Council

GP	General Practitioner
Grad Dip	Graduate Diploma
HCPC / HPC	Healthcare Professions Council
HEI	Higher Education Institution
HSST	Higher Specialist Scientific Training
ICM	Intensive Care Medicine
ICT / IT	Information (and Communications)Technology
ISFE	Intercollegiate Speciality Fellowship Examination
MA	Master of Arts
MBBS	Bachelor of Medicine, Bachelor of Surgery
MBChB	Bachelor of Medicine, Bachelor of Surgery
MChD/ BChD	Master of Dental Surgery, Bachelor of Dental Surgery
MCQs	Multiple Choice Questions
MedSCi	Masters in Medical Science
Mini-CEX	Mini Clinical Examination Exercise
Mini-PAT	Mini Peer Assessment Tool
MNutr	Master of Nutrition
MNurs	Master of Nursing
MRCGP	Membership of the Royal College of General Practitioners
MRCP	Membership of the Royal College of Physicians
MRCPsych	Membership of the Royal College of Psychiatrists
MRes	Master of Research
MSc	Master of Science
MSC	Modernising Scientific Careers
MSF	Multi-source feedback
MOSLER	Multiple Objective Structured Long Examination Records
MPH	Master of Public Health

MPharm	Master of Pharmacy
NEBDN	National Examining Board for Dental Nursing
NHS	National Health Service
NMC	Nursing and Midwifery Council
NSHCS	National School of Healthcare Science
NVQs	National Vocational Qualifications
OCE	Observed Clinical Event
OLAT	Online learning and assessment tool
OSCE	Objective Structured Clinical Examination
OSDPHE	Objective Structured Dental Public Health Examination
OSPE	Objective Structured Practical Examination
OT	Observation of teaching
PACES	Practical Assessment of Clinical Examination Skills
PAD	Practice Assessment Document
PAQ	Patient Assessment Questionnaire
PBA	Procedure based assessment
PBL	Problem-based learning
PDP	Personal development plan / portfolio
PGCert	Postgraduate Certificate
PGDip	Postgraduate Diploma
PS	Patient Survey
PT	Part time
PTP	Practitioner Training Programme (Healthcare Science)
RITA	Review of In Training Assessment(s)
RCSLT	Royal College of Speech and Language Therapists
SCPHN	Specialist Community Public Health Nursing
SCR	Structured Clinical Reasoning

SLE	Supervised Learning Events
SOC	Society and College of Radiographers
STP	Scientist Training Programme (Healthcare Science)
STP	Specialist Training Programme (Medicine and Dentistry)
TAB	Team assessment of behaviour
VLE	Virtual Learning Environment
WBA	Workplace-based Assessment.

List of tables and figures

1. Introduction

There is an increasing focus within healthcare on the need for professionals to be able to work effectively in multi-professional teams. This requires each professional to have some understanding of the nature of the other professions. There has also been much discussion on the value of inter-professional learning (IPL) and its contribution to better healthcare (see for example Clifton, Dale and Bradshaw 2006, Faresjo 2006 and Barr and Low 2013). These discussions raise the question of whether different professions should learn together in more targeted ways than relying on learning whilst working together in multi-professional teams and whether those with responsibility for healthcare education from one professional area are equipped to support those from another. One argument against this position is that the individual health professions are distinctive and learners need to learn in different ways, which would make teaching them together difficult. However, there has been no systematic investigation into how learning is perceived within each professional area and whether in fact there are great differences. This study was commissioned by the pan-London Multiprofessional Faculty Development team to investigate how understandings of learning are perceived within each healthcare area and how they compare across professions. It is hoped that the findings will also assist in developing an online tool for educators trying to promote more inter-professional approaches to teaching and learning. This study is to be read alongside the recently commissioned 'Review of qualifications and training for clinical educators in the healthcare professions' (Austerberry and Newman 2013), which sets out how supervision of students and trainees takes place within each healthcare profession.

The report is structured as follows: discussion of the methods used, presentation of the findings and discussion of the implications.

2. Method

This is a qualitative, desk-based study, drawing on documentation related to programmes and curricula for a range of healthcare professions.

2.1 Research questions and scope

The main research questions for this study are:

1. What approaches to teaching and learning are reflected in programmes and curricula across the healthcare professions?
2. What similarities and differences in approaches are there between healthcare professions?
3. What similarities and differences in approaches are there between different levels of award (ie undergraduate and postgraduate levels)?

Approaches to learning and teaching are evident in a number of ways within programme or curricula documentation. There may be explicit discussion of the learning theories underpinning the design of the programme or curricula. Where this is not provided the way the programme or curricula has been designed, in terms of types of learning and assessment activities, the structure, the aims and objectives that are set, give some indication of the ways learning are perceived. For example, reliance on traditional lectures in which learners listen to the lecturer indicates a view of learning as involving transmission of information. This may well be linked to assessment that focuses on testing accurate understanding of knowledge. As another example, a reliance on reflective writing and formative assessment would suggest a view of learning in which the learners' understanding of their own learning processes is important.

In order to answer the main research questions a series of sub-questions around learning were therefore asked in relation to each healthcare area and level of award:

- What theories or theoretical ideas about learning are explicitly set out as underpinning particular programmes / curricula?
- How are programmes/ curricula structured?
- How are the aims and learning objectives or outcomes expressed?
- What types of teaching and learning activities are used?
- How is learning assessed?
- In what ways, if any, is technology used to enhance learning?

The healthcare professions considered are:

- Medicine (undergraduate and postgraduate)
- Nursing (adult, child, mental health, community, undergraduate and postgraduate)
- Midwifery (undergraduate and postgraduate)
- Dentistry (undergraduate and postgraduate)
- Dental nursing
- Pharmacy
- Healthcare science (PTP and STP)
- Allied health professions (undergraduate and postgraduate where applicable)
  - Art therapy (including Drama and Music therapy)
  - Dietetics
  - Occupational Therapy
  - Orthoptics
  - Paramedic Science
  - Podiatry
  - Physiotherapy
  - Practitioner Psychology
  - Prosthetics / orthotics
  - Radiography
  - Speech and language therapy

The study focused on documentation about programmes and curricula that are publically available. The main sources of data, therefore, were:

- programme specifications from HEI programmes,
- websites of HEIs (particularly if a programme specification could not be accessed or was presented on the web)
- websites of governing bodies
- documents such as generic curricula or standards documents available from governing bodies or similar organisations.

The search strategy involved the following steps:

- Search of the NHS careers list of programmes for each healthcare profession and recording which HEIs offered which programmes (see Appendix 1 for list of HEIs).
- Search of websites of professional bodies, such as the Healthcare Professions Council (HCPC/ HCP) for lists of approved / accredited courses (see Appendix 2 for list of websites).
- Search of websites of professional bodies for documents, such as professional standards or curricula guidance.
- Google search and HEI website searches for programme specifications.

Currently within HEIs courses are usually referred to as programmes, so this term will be used throughout the report. The programme specifications and information on programme content are the de facto curricula in many instances. Most HEIs will not have a separate curriculum document for their programmes, though they are likely to have programme handbooks in which much relevant information will be set out for learners. This information is not always publicly available so was not included in this study. Where HEIs do not determine the curriculum, there are national curricula available from governing bodies. These tend to be fuller curriculum documents than programme specifications, including, for example, information on the consultation process that was undertaken for developing the curricula, the teams involved, as well as the syllabus content in some detail. Programme specifications tend to be focused more on the structure, aims, learning outcomes, assessment strategy, teaching and learning methods, and information about quality assurance.

2.2 Sampling

Within qualitative methods the major concern with sampling is gathering enough data to answer the research questions, rather than identifying a statistically representative sample. There is no aim within qualitative studies to make statistical generalisations (see Silverman 2011). For this study, the potential sample size was huge, and as it was not necessary to look at all the possible programmes in all health areas in order to get a sense of how learning is perceived, and not possible in the time allocated for the study, a combination of convenience and purposive sampling was used (see Cohen, Manion and Morrison 2011). All sampling decisions were made on the basis that the resulting sample would still provide enough information to answer the research questions.

The first sampling decisions were to:

- Restrict the focus to England
- Restrict the focus to HEIs (ie not including programmes offered directly by other organisations such as Royal Colleges or Ambulance Trusts)
- Restrict the focus to programmes approved or accredited by governing bodies. For example, within the Allied Health Professions this meant only those programmes listed by the HCPC.

The focus on England reduced the sample size to some degree. Choosing to focus on only HEIs had a greater impact in some areas than others, for example within Paramedic Science. Table 1 below gives an overview of the number of HEIs in England offering approved / accredited programmes for each healthcare profession. This gives a sense of the potential sample size for each professional area. It is important to note that the number of HEIs offering programmes does not equate to the number of programmes as many offer more than one (ie different levels of award and also variations on programmes for different specialities within a healthcare area, such as Adult or Mental Health Nursing). Many of the HEIs offering programmes in one area also offer programmes in another.

Table 1: Number of HEI providers in England of approved / accredited programmes by healthcare profession.

Healthcare profession	No HEIs in England offering programmes	Notes
Medicine	23	Listed on NHS careers for Medical degrees. No numbers for postgraduate training.
Nursing	54 for Adult; 45 Child; 50 Mental Health; 36 Specialist Community Public Health	Listed by NMC. Many of these HEIs also offer Midwifery programmes and many offer more than one type of Nursing programme
Midwifery	44	Listed by NMC. Many of these HEIs also offer Nursing programmes
Dentistry	11	Listed by GDC for Dentistry degrees. No numbers for postgraduate training.
Dental Nursing	4	Listed by GDC
Pharmacy	21	Listed by Royal Pharmaceutical Society
Healthcare science		This is a developing area so the number of HEIs offering courses in line with the new curricula is unclear. NHS Careers list has different themes and specialities compared to Modernising Scientific Careers site.
Art / Music / Drama Therapy	13	Listed by HCPC.
Dietetics	9	Listed by HCPC.
Occupational Therapy	25	Listed by HCPC.
Orthoptics	2	Listed by HCPC.

Paramedic Science	23	Listed by HCPC.
Physiotherapy	32	Listed by HCPC.
Podiatry	9	Listed by HCPC.
Practitioner Psychology	Approx. 38	Listed by HCPC. There are some other organisations which run courses and also some programmes offered jointly which makes it difficult to determine the exact number of HEIs
Prosthetics / Orthotics	1	Listed by HCPC.
Radiography	20	Listed by HCPC.
Speech and Language Therapy	15	Listed by HCPC.

In order to reduce the sample further subsequent decisions were made to:

- Restrict the focus initially to qualifications required for registration
- Restrict the focus to publicly available documentation or information
- Aim for a range of HEIs across the country (ie to include older and newer institutions).

The focus on registration qualifications highlighted the fact that the level of award required for registration varied across professions. For example, the Pharmacy requirements are all at Master's level and the Practitioner Psychology requirements are for a Doctorate. Within Medicine and Dentistry undergraduate level is insufficient for full registration and professional qualification. Therefore it was also decided to consider post-graduate and also post-registration programmes for areas where they are essential for full qualification (Dentistry and Medicine). It was also anticipated that including post-graduate areas would also provide insight into potential areas of similarity for inter-professional education, so other programmes up to Master's level were considered for other areas, where they are offered. The study did not consider doctoral level study, however, unless that was required for registration.

Restricting the focus to publically available documents, in particular programme specifications or curriculum documents from governing bodies, or online information on websites, meant that some HEIs are unexpectedly not represented in the sample. In some cases the full programme specification required log in details to access and the websites did not provide sufficient information on the areas required to answer the research questions. Only a couple of exceptions were made. For example there is only one programme for Prosthetics / Orthotics and this does not have a programme specification easily accessible. Similarly one of two examples for Orthoptics has only website information. The website information, though not comprehensive, was used in both cases in the absence of other programmes to sample.

Having refined the potential sample, there was still a need to choose programmes within each healthcare area. Where the number of HEIs offering programmes was very small, all examples were considered. Where areas covered a range of specialities at least two from each area were considered (eg Art, Drama and Music Therapy). It was also necessary to aim for a degree of data saturation, in order to be able to answer the research questions. Where numbers were large at least a total of 6 examples were considered (covering both undergraduate and postgraduate as applicable). This number was practical as a starting point within the time available. If there was great variation in what was offered a couple more examples were then added. If similar results were emerging then the no more examples were considered.

With some professions, such as Healthcare Science, the new curricula documents are very detailed in terms of aims, learning outcomes, structure and requirements that there is little room for great variation within what HEIs offer. Similarly HEIs do not seem to produce programme specifications for Foundation Years for Medicine or Speciality Training Programmes as there are detailed curricula available from governing bodies. In both these examples the sample was restricted to the generic curricula documents and again where a large number are available a minimum of 6 were considered.

The resulting final sample is sufficient to give a clear sense of how programmes are conceived and how learning and teaching is viewed within each professional area and sufficient to inform discussions amongst providers and educators. Although the findings present an overview of how each healthcare area perceives learning and teaching this is not to claim that each programme sampled within a particular area has exactly the same aims,

learning outcomes, teaching and learning activities. What is presented is an accumulation of the ways in which learning and teaching is presented across the sample within each healthcare area. Individual providers and educators will therefore be able to look at the results and compare with their own provision, drawing their own conclusions as the degree to which their particular programme relates to the evidence presented.

2.3 Data collection and analysis

Once relevant documents were identified, each was analysed in relation to the following indicators for understandings of learning and teaching:

- Type of course (level, name)
- Length of course (both part-time and full-time where applicable)
- Structure of course, including length and type of placements
- Aims
- Learning outcomes
- Teaching and learning activities and theories of learning
- Use of technology for teaching and learning
- Assessment activities

The range of information under each of the above categories was then summarised in an excel spreadsheet. If there was a range of different types of qualifications available these were all listed, including some of the differences in names of qualifications. For information about other aspects, such as teaching and learning activities, the number of times an activity was mentioned by more than one provider in a particular healthcare area was not recorded. Providers use different phrasing for what might be the same activity, so strict calculation of how many providers use the same activity was not possible. Given that the sample was not statistically representative a numerical conclusion would also not be particularly informative. The aim was to compare between professions, rather than between programmes within a professional area, so recording the range of activities, noting which were most commonly used, and what the trends were within a professional area was considered a sufficient level of detail. However, if a more unusual activity or approach was mentioned by a provider for one programme, but not mentioned elsewhere, this was noted.

In addition to the above information the standards and views on learning and teaching set out in documents from governing bodies were also summarised. Not only does this provide a point of comparison with what HEIs set out in their documentation, but in some cases this is the only documented information available.

Analysis of documents requires consideration of the features of documents as data: they are not produced for the research by researcher intervention (unlike interview data) and the intended meaning cannot be checked without speaking to the authors, so the context of the documents needs to be understood as part of the analysis (Cohen and Manion 2011). The types of documents used here are multiple authored texts designed for validation by HEI and governing body committees. As they follow institutional formats it is likely that they represent both a reflection on the process of thinking about learning and teaching by a group of experienced educators, as well as a degree of standardisation in how those views are presented.

A non-numerical approach to content analysis of the data was used (see Cohen, Manion and Morrison 2011). This allows for a systematic investigation of large amounts of data (see Flick 2006) and involved: choosing texts relevant to the research questions, sampling from them, developing certain categories to search for, coding the material based on those categories, comparing categories and making links and then drawing theoretical conclusions (see Silverman, 2011 and Cohen, Manion and Morrison 2011). Alongside the aspects of learning identified above other pre-determined sub-categories were included. Examples included, inter- or multi-professional working or learning, as this relates directly to the importance of this study. Similarly, certain theoretical ideas around learning could be anticipated, such as a focus on competences, knowledge, skills and values, or ideas such as reflective practice. Alongside searching for information on these pre-determined sub-categories, other types of information emerged as important during the study. When this occurred documents already analysed were revisited to see if any information had been missed (see Holton 2007).

There is a degree of interpretation in the presentation of the data in the spreadsheet, in that decisions were made on what to record and whether to quote directly or paraphrase. Where lists of information could be given without paraphrasing this was done. Some statements from documents were also quoted in full. Otherwise the data was summarised. In this report the data is then interpreted further, drawing out the similarities and differences between

healthcare areas, and interpreting what is presented in relation to learning and teaching through the information gathered.

2.4 Ethical considerations

Individual HEI programmes are not named within the data spreadsheet or within this report, though a list of the HEIs whose programmes were considered is available in Appendix 1. As most HEIs offer a range of programmes in different healthcare areas it was felt that in most cases this provided them with sufficient anonymity. Clearly where only 1 or 2 HEIs offer programmes it is possible to identify which programmes were considered. As all the information is publicly available and HEIs and governing bodies set out the documentation for a public audience this possibility of identification was not considered to be too problematic. The aim of the study was also not to find fault with any provision, but to get a sense of what is offered. It is hoped that the conclusions about the differences between professional areas are therefore understood as informing debate rather than passing judgement on one sector or HEI or programme in relation to another.

2.5 Limitations

There are a number of limitations to this study. As discussed above, it was not possible in the time available to look at all programmes and the sampling strategy might have missed particularly innovative programmes. Some HEIs are also under-represented as their documents were not easily available through online searches.

A curriculum or programme is in reality more than the documentation, which cannot capture all that happens in practice. Therefore this study is only able to comment on the written intentions of the HEIs and governing bodies. Curricula and programmes change as they are delivered and the documentation is only likely to be revised annually and usually to document major rather than minor changes in implementation. Such documentation, though fairly standard in format, can be more detailed in some cases than others. It is therefore quite possible that many of the courses are more or less innovative in practice than the documentation would suggest.

3. Presentation of findings

In this section the main findings of the study are presented. Each aspect of the programmes for which data were collected, is treated separately and the differences and similarities between healthcare professions and levels of award are identified. In the discussion section that follows the implications of these findings for perceptions of learning and teaching are considered.

3.1 Types and level of programmes

The main point to make about the type and level of programmes is that the requirements for registration vary between healthcare professions, which also affects some of the aims of those programmes (see discussion below). Within Medicine and Dentistry under-graduate study to Bachelor level followed by 2 years Foundation and at least 3 years specialist training is required in order to reach consultant. Healthcare Science also has 3 clear stages of qualification with Bachelor sufficient for Practitioner Training Programme (PTP), but Master's necessary for the Scientist Training Programme (STP), and Doctoral programmes available also for higher levels. For Pharmacy and Art / Music / Drama Therapy the basic qualification required is at Master's level and for Practitioner Psychology at Doctoral level. Within Nursing and Midwifery there are both Bachelor and Master's level programmes on offer, with many initial training programmes at Master's level. Dental Nursing is an exception where the main qualifications are Certificate or Diploma in Higher Education or a Foundation Degree. Within the Allied Health Professions there is also variation. Apart from those already mentioned above, Dietetics, Orthoptics, Occupational Therapy, Paramedic Science, Physiotherapy, Podiatry, Prosthetics/ Orthotics, Radiography and Speech Therapy require undergraduate level study for either Foundation Degrees / Diploma Higher Education or Bachelor degrees. Apart from one post-graduate programme, there are no Master's level programmes listed on the approved lists for Paramedic Science, Podiatry and Prosthetics/ Orthotics.

3.2 Structure of programmes, including placements

Across all healthcare professions both under-graduate and post-graduate programmes have clear progression routes. It varies as to whether there are separate curricula for different stages and whether there are specific, examined progression points. Within post-graduate Medicine and Dentistry in particular there is a clear demarcation between Foundation years 1 and 2 and Speciality Training, with separate generic curricula for each.

Most of the undergraduate programmes specify that the teaching in each year is at a different level (4-6) until the final year which is at Bachelor honours level. Programmes tend to be modular across all professional areas, which reflects the trend within the HE sector, though there are a couple of exceptions, such as one Medical undergraduate programme. Many programmes have compulsory modules and a minimum threshold for passing those within a particular year before moving on to the subsequent year. Programmes also have a variety of exit points, though this could mean failing to reach the requirements for registration for the learner. Interestingly many programmes do not offer many optional modules, even at post graduate level (see for example Pysiotherapy Podiatry, Practitioner Psychology and Speech Therapy programmes).

The progression route in Medicine, Dentistry and Healthcare Science includes a move from core generic modules, to speciality modules. With Medicine and Dentistry the last year is often a chance for the trainee to specialise in an area of their choice.

Placements are evident in all healthcare areas. They tend to increase as programmes progress, with generally longer placements later, both at under- and post-graduate level and within all professional areas. It also varies as to how programmes organise those placements (in terms of blocks of time or weekly placements). Within the Allied Health Professions lower level students are more likely to have short visits to observe in placement initially, moving to longer supervised placements later. Some areas have a stipulated amount of time for placements, which may take place in a variety of settings. Allied Health Professions have a minimum 1000 hours as stipulated by HCPC, with some programmes requiring up to 1500. Medicine and Dentistry do not seem to specify number of hours or percentage of time. With post-graduate level training Foundation and STP trainees are employed within hospitals or other clinical working environments, so the clinical element of the study is the starting point. It is more likely that HEIs have to work hard to protect the formal teaching time than the clinical. Nursing and Midwifery have at least 50% clinical time on most programmes. Within Healthcare Science STP there is a recommendation of 80%

work-based training and 20% academic. Pharmacy is structured slightly differently with some placements during the main period of study, but then a requirement for 52 weeks of supervised and assessed training for registration, post academic study. Some HEIs help students find this placement. Occasionally programmes offer a work abroad placement (for example within Pharmacy), but this is rare.

3.3 Aims of programmes

There are some fairly unsurprising themes within the aims of programmes that pertain to all professional areas. The first is the overriding concern to produce qualified professionals who meet the standards of practice of proficiency required by the relevant governing bodies and who can work safely and effectively within the contexts in which they will be employed. There is much discussion of patient-centred approaches to the profession and general standards of professionalism, such as ethical, legal, non-discriminatory behaviour.

Another theme that cuts across is the aim of producing professionals committed to lifelong learning and continuing professional development. Not all programmes mention both terms but the general aim is there in one form or another throughout. (There is only one exception to this and that is the one example from Prosthetics / Orthotics which does not mention this specifically, but this could be explained by the absence of a programme specification and the reliance on website information for this study).

A similar cross-cutting theme is related to reflective practice. There is more variation as to how this is phrased, with not all professions or programmes talking about reflective practitioners. However, there is either mention of reflective practice, reflective practitioners, being able to reflect, or similar wording, in all professional areas, and it is a key part of professional standards, such as the HCPC standards of proficiency. (Again the only professional area where this is not mentioned explicitly in the aims is Prosthetics / Orthotics, where there is only a little information available on the one programme available. Again it is likely that this explains the anomaly, as reflection is part of the HCPC standards of proficiency and some of the teaching and assessment activities listed for this programme imply opportunities for reflection).

Being prepared for multi-disciplinary or multi-professional working is another theme that occurs in one form or another across most of the professions. Interestingly, within Dentistry this is expressed more as working with the dental team, which includes a number of different professionals, rather than multi- or inter-professional working. Within the Dental Nursing programmes sampled this does not seem to be a specific aim, but is included within the learning outcomes. Interestingly though programmes are preparing learners for multi-professional working, only a few areas actually stress the idea of inter-professional or shared learning. These include Nursing, Healthcare Science and some of the Allied Healthcare Professions, such as Podiatry. Such programmes may have modules that are taught inter-professionally or learning activities such as inter-professional group activities. Dental Nursing programmes also mention collaborative learning, which could be interpreted as the same, and is likely to be focused on the dental team. CAIPE (2006) makes a distinction between inter-professional learning, in which the aim is to learn from each other, multi-professional learning, in which learners learn something alongside each other, and team working where people work together with respect for their individual roles. The use of these terms by particular professions therefore implies a different view on the nature and value of learning in the multi-professional work context.

In some of the professions there is an emphasis on leadership: Medicine, Nursing, Midwifery, Dentistry, Dental Nursing, Healthcare Science, Dentistry, and a small number of the Allied Healthcare professions such as Paramedic Science, Podiatry and Physiotherapy. This could refer to leadership in teams within the healthcare setting and / or leadership within the particular profession and field of science. Interestingly, in the light of the above discussion, in the Medical and Dentistry programmes / curricula discussion of multi-professional and team working is linked to leadership. It is worth exploring whether this link and concerns over inter-professional learning for these professions, explains why the term inter-professional learning does not seem to feature within Medicine and Dentistry, in contrast to other areas where leadership is also a priority.

There are areas which differ between professional areas and also levels of programmes. For example, Medicine, Nursing, Dentistry and Practitioner Psychology, particularly at the higher levels, have a focus on teaching and training of others.

One area in which a similar level distinction might be anticipated is in relation to research. However, there is less variation than might be expected. Clearly Practitioner Psychology

programmes which are at Doctoral level have a heavy emphasis on research as a key aim, and it is the case that most Master's level programmes require a research project or dissertation. Within Dentistry and Medicine during STP there are also academic options allowing trainees to undertake substantial research. However, alongside these very specific examples of learners undertaking a research project, developing research skills is present as an aim at all levels and across all professions. For example, within Healthcare Science research development is a key theme for both PTP and STP levels of training. In general, for the lower levels of qualifications across all healthcare professions there is a focus on understanding research, more than producing it, though again this can vary with some Bachelor level programmes requiring a dissertation or research project. Understanding research is generally framed in terms of being able to evaluate the scientific evidence for practice and being able to draw on it as appropriate, and developing analytical, evaluative and critical thinking skills. These are mentioned in one form or another in relation to Medicine, Nursing and Midwifery, Dentistry, Dental Nursing, Pharmacy and Healthcare Science, within some of the Allied Health professions such as Art Therapy, Occupational Therapy, Paramedic Science, Physiotherapy, Orthoptics, Speech Therapy and Practitioner Psychology. The term 'critical' is not always used, but there is usually some discussion of appropriate skills for research which would imply a level of critical evaluation.

3.4 Learning theories and learning outcomes

One of the difficulties with looking for articulations of theories of learning in the documentation is that there are some historically influential theories around learning which inform other theoretical ideas, but which are taken for granted to a degree and therefore not set out explicitly. In effect theory can be layered. For example, the basic principles of constructivism, which are hugely influential within Higher Education (see Fox 2001, Schweitzer and Stephenson 2008, Meyer 2009), also underpin newer and more particular approaches to learning such as reflective practice, experiential learning, situated learning, problem-based learning (PBL) etc. The study looks therefore for both the underpinning historical theoretical influences and these more specific approaches.

The first finding is that the programme and curricula documentation does not explicitly identify the influence of some of the major theories such as constructivism and

behaviourism. The only exception is one programme for Dietetics which talks about a 'constructivist and dialogic approach' and this is in relation to the development of professional identity. However, programmes do identify a range of approaches to learning which suggest that the influence of both behaviourist and constructivist understandings of learning are present.

In fact, all programmes from all professional areas have a combination of these two main influences at work. There is evidence of an influence of behaviourist understandings of learning in the focus on very detailed learning outcomes and the listing of sets of competences to be achieved. These are usually expressed in terms of behaviours to be demonstrated and measured through assessment. Alongside this specificity there is also a much more constructivist perspective evidenced through the focus on approaches that develop understanding, such as problem-based learning, experiential learning, reflective practice, formative assessment and feedback, and inquiry-based approaches. This combination suggests attempts within the programmes and curricula to emphasise learning as both changes in behaviour and the development of understanding. This is not without its challenges, as there are potential tensions between the desire for very specific outcomes for all learners and the constructivist emphasis on individuals developing their own understanding by combining new experience and knowledge with old. The latter would suggest the possibility of differentiated outcomes which are not necessarily pre-determined, in a contrast to the outcomes based / competency approach which is aiming for a minimum and standard level to be achieved.

In terms of the learning outcomes and competences there are again some clear trends across all the professional areas. Most programmes have learning outcomes divided into categories; the most common being knowledge and understanding and then skills. Skills can be broken down again into cognitive / intellectual / thinking skills, subject-specific skills, practical skills, key / transferable / employability skills. This is in line with the Dearing report (National Committee of Inquiry into Higher Education 1997). Interestingly, very few programmes or professional areas go beyond those recommendations and list attitudes or values as a separate category. The exceptions to this are the some of the Medical STP curricula. Values and attitudes are, arguably, hard to measure objectively in terms of behaviour, so possibly that explains why they are not listed as specific learning outcomes in their own right. In some of the Healthcare Science courses there is a category for attributes. This covers generic professional attributes, some of which are particular skills rather than values or attitudes. It

would seem therefore that the learning and demonstration of the values and attitudes is expected occur with the demonstration of knowledge and skills.

Most of the programmes only list outcomes that relate specifically to healthcare. The exceptions to this are programmes from a couple of HEIs who have a set of graduate attributes they expect all their students to demonstrate, such as global citizenship. One HEI in particular sets out how these attributes apply to the healthcare, emphasising outcomes around understanding health issues in a global context, developing cultural sensitivity within healthcare etc. This reflects some of the current debates about global perspectives within higher education, which are influenced by some of the critical theory views on learning (see Bourn, Mackenzie and Shiel 2006).

In terms of the more constructivist influenced approaches to learning or teaching there are a number of common ones in the programmes sampled, which are discussed below.

Problem-based Learning (PBL) is cited in undergraduate Medicine, Nursing, Midwifery, Dentistry, Pharmacy, Healthcare Science and then from the Allied Health Professions: Occupational Therapy, Orthoptics, Paramedic Science, Podiatry, Practitioner Psychology, Radiography and Speech Therapy. PBL tends to be listed either as a partial approach, or more commonly as one example of the teaching and learning activities used. There is one example of an Occupational Therapy programme which sets out the theoretical basis for the programme in some detail and discusses PBL as a main approach. It is linked very closely to the idea of learning as a process and about inquiry and developing capability rather than just competence. One of the Paramedic Science programmes also talks about how PBL is perceived to help develop autonomy, leadership, collaboration, independence, decision making and flexibility. There are also other examples of HEIs identifying a particular approach to problem solving or enquiry which they say is a form of PBL. It is clear that PBL is a popular approach within healthcare education, but it is less clear exactly how it is interpreted as an approach in practice in each programme and it appears it has undergone modification in many cases.

There are various forms of experiential learning cited in most of the professional areas, other than the undergraduate Medical, Nursing and Midwifery programmes sampled. The Medical Foundation Curriculum talks of the need for learning to be experiential, for example.

Although experiential learning originally comes from Kolb's (1984) work and is often cited in the literature in relation to his experiential learning cycle, in the documents sampled it is used in a variety of ways, and mostly with no reference to Kolb. As with PBL there are some variants, which again are not really explained. There is one example in Dentistry of something called 'self-experiential learning' (SEL). Elsewhere there is 'clinical experiential learning' (Healthcare Science) or more commonly 'workplace-based experiential learning', which might also just be called workplace-based learning (Allied Health Professions: Art Therapy, Dietetics, Radiography and Speech Therapy). It is worth noting that although workplace-based learning is a common theme across professions, there is only one mention of 'communities of practice' (in Healthcare Science), which is a theoretical idea often discussed in relation to work-place based learning in the literature (see Rainbird, Fuller and Munro 2004).

Reflective practice is also a theme in all programmes in all professional areas (see discussion of aims above). Again there are potential variants in the understanding of reflective practice intended within the programmes or curricula, but the term is rarely elaborated on in detail; the exceptions being the mention in a couple of programmes of Schön's (1991) ideas of reflection in- and on-action (Nursing and Healthcare Science). There is no explicit discussion, for example, of the need for critically reflective practice, which in much of the discussion in the literature is seen as distinct from other types of reflection (see for example Fook 2006 or Brockbank and McGill 2007). It may be that this is understood as a given, or that the critical theory influences on critically reflective practice are not thought as applicable to healthcare education. This is not to say that there is not an emphasis on criticality, as part of thinking skills. In fact many programmes have a focus on 'enquiry based learning' or some variant, such as critical enquiry. Examples include programmes in Midwifery, Dentistry, Dietetics, Occupational Therapy, Physiotherapy and Speech Therapy.

Other than these main themes there were no other theoretical ideas in relation to learning that cut across the sector. A couple of individual ones which are mentioned include: active learning in one Occupational Therapy programme, which is linked directly to the history and nature of the field, and in a couple of programmes in Speech Therapy, Healthcare Science and Radiography, and Action Learning in one Paramedic Science programme. There are also a couple of mentions of specific theorists and their models, which again mostly come from a constructivist perspective, or are compatible with it:

- Dreyfus on developing expertise (Medical Foundation Curriculum)

- Argyis and Schon double loop learning (one particular Medical STP curriculum)
- Miller's framework (same particular Medical STP curriculum)
- Ikujiro Nonaka on knowledge management (same particular Medical STP curriculum)
- Kolb's experiential learning cycle (same particular Medical STP curriculum)
- Entwistle on deep learning (one Nursing example)
- APIER / APIE - Assess, plan, implement, evaluate and reflect (one Specialist Community Public Health Nursing example)
- Steinaker and Bells Experiential Taxonomy on standards of proficiency (same Specialist Community Public Health Nursing example)
- Dewey on pragmatism (same Occupational Therapy example as active learning)
- Spiral model / spiral learning (Medical curricula and Pharmacy).

The only other generic mention of learning theories within the documentation comes in the Medical Foundation Curriculum which points out that doctors need to learn to teach others, for which knowledge of theories of adult learning are necessary. However, it does not specify which theories, instead listing the types of skills or activities that this requires doctors to master.

3.5 Learning and teaching activities

In terms of learning and teaching activities identified within the documentation the constructivist, rather than behaviourist, influence is the most evident, which is logical given its focus on the process of learning, rather than the product.

The number of types of activities programmes use across all the healthcare professions is large, suggesting that there is a great deal of variety within and across programmes. There is some variation in how much detail is provided on the activities, with some documentation almost identifying which activities for which class, whilst others provide a list in relation to specific learning outcomes or a general statement of the teaching and learning activities. The level of detail does not seem to correlate with any particular professional area, but more with the type of format of the programme specifications or curricula documentation.

The most popular teaching and learning activities, which could be found across all professions, are

- lectures, with some emphasis on these being interactive in some cases
- tutorials (individual and group), including student led tutorials
- group work (PBL type activities, discussion, presentations, projects)
- seminars
- self-study activities, included some guided reading
- research activities.

Then there are some other types of activities which are mentioned in the sampled programmes, but not for all professional areas:

- **Lab work**: Medicine, Midwifery, Dentistry, Pharmacy, Dietetics, Occupational Therapy, Orthoptics, Physiotherapy, Podiatry and Radiography
- **Simulation**: Medicine, Nursing, Midwifery, Dentistry, Pharmacy, Healthcare Science, Paramedic Science, Speech Therapy
- **Role play** (possibly with the use of video): Medicine, Nursing, Healthcare Science, Dietetics, Orthoptics, Paramedic Science, Physiotherapy, Speech Therapy.

Alongside the activities for the formal teaching, in some of the documentation such as the Medical Foundation Curriculum, there is emphasis on the learning opportunities within work. This includes not just the Supervised Learning Events (SLEs) that are required, but participation in clinical meetings, observing others practice, general supervised clinical practice, reviewing patient notes etc.

Although it is likely that the use of patient feedback in some way or other is a key part of all programmes, and certainly once working in placement dealing with patients is clearly central, there are some programmes which specifically highlight patient-related activities in their discussions on teaching and learning: Medicine, Nursing, Pharmacy, Dental Nursing, Paramedic Science, Practitioner Psychology and Podiatry.

Other tools that are used, which are specifically mentioned, are Personal Development Plans (PDPs), in Medicine, Nursing, Midwifery, Dentistry, Healthcare Science, Dietetics,

Paramedic Science, Radiotherapy. These pick up the focus on reflective practice and the sense of learner autonomy within a set curriculum. It is possible that these are in fact used more widely than is stated, as in some cases they form part of the portfolio that students or trainees have to complete, so it is possible that they are not listed separately in some programme specifications. Reflective practice activities are clearly evident across all professions and it varies as to what those activities are. Pharmacy, Art Therapy and Practitioner Psychology specifically list reflective logs or diaries, or other types of reflective writing as learning activities. However, as the discussion on assessment below indicates, these activities are also used more widely for assessment. It is difficult to see how they can be used only for assessment in a summative fashion, as they are designed to take place over the period of a programme, so it is reasonable to infer that they are used more widely than first indicated as learning activities.

There are clearly some profession specific activities, which are not relevant for all professional areas. The lab work, cited above, is one example. Others include personal therapy for Practitioner Psychologists and Art/ Music/ Drama Therapy and individual and group performance for the latter group. They have to keep up their skills as artists, dramatists and musicians, alongside therapeutic application.

There are also some activities which occur more within the post-graduate level programmes, such as journal clubs and undertaking outside courses on specific issues, such as communication skills during STP, or study days. For Practitioner Psychology, which is at doctoral level, there is more emphasis on activities such as conferences, preparing journal papers. The other activities which happen at post-graduate level are teaching of others. The Foundation Curriculum for Medicine, mentioned above, emphasises the skills doctors need to develop: assessing learner needs, ensuring interaction in classes, presentation skills and giving feedback (Pendleton's rules).

3.6 Assessment

Given that the assessment has to align with learning outcomes and content it is not entirely surprising that the similarities in those areas across healthcare professions are mirrored in the assessment strategies.

The first point to note is that in line with the more constructivist views on learning all programmes across all healthcare areas discuss or imply the use of a mixture of formative and summative assessment, with feedback considered important in supporting students and trainees. The role of the supervisor detailed in Austerberry and Newman's (2013) report, is one example of this. Some HEIs discuss this distinction between different types of feedback with reference to the idea of the importance of *assessment for* and *assessment of* learning, something that is emphasised in the literature (see Assessment Reform Group 2000). As a result it is often the case that an activity might be listed in the assessment strategy which could also have been listed as a learning activity, such as reflective writing, portfolios or presentations.

There is a wide range of assessment activities cited in all professional areas and all programmes. Arguably the widest is within Medicine as there are quite detailed requirements listed for all the types of workplace-based assessments alongside the more traditional assessment methods. At post-graduate level for Medicine assessment also includes supervisors' reports, observation of teaching, audit and appraisal activities. Across all the professional areas the most commonly cited assessment activities are formal written exams, which might include longer pieces of writing and short-answer questions and MCQs. Vivas/ oral exams also cut across all professions, as do practical examinations and various forms of reflective writing. It varies as to whether these are reflective essays (Medicine, Nursing and Midwifery) or reflective logs, or diaries (Medicine, Nursing, Pharmacy, Healthcare Science, and the range of Allied Health Professions). Case studies feature quite commonly also in one form or another (Medicine, Nursing, Dentistry and most of the Allied Health Professions). Those programmes with research outputs use the final dissertations / thesis as key pieces of assessment. Others refer to research proposals, literature reviews, preparing journal articles or similar research related activities. These tend to be for the higher level qualifications in Healthcare Science and some of the Allied Health Professions such as Practitioner Psychology.

Workplace-based assessments (WBAs) are also very common, though the full range of them is only evident in Medicine and Dentistry. All areas use some form of OSCEs, with the exception of some of the Allied Health Professions, such as Practitioner Psychology, Speech Therapy and Art Therapy. Case-based discussions (CbDs), Direct Observation of Procedures (DOPs), Multi-source Feedback (MSF) and mini-Clinical Examinations (mini-

CEX) are limited to Medicine and Dentistry during Foundation and STP and the higher levels within Healthcare Science.

Other examples of assessment mentioned include poster or other types of presentations (Nursing, Midwifery and some of the Allied Health Professions), coursework assignments or essays (Midwifery, Dentistry, Dental Nursing, Healthcare Science and a couple of the Allied Health Professions), observation of teaching (Medicine), critical incident analysis (Midwifery and Paramedic Science). For Dentistry and Medicine there are also membership examinations.

3.7 Use of Technology to enhance learning

Given the current increase in the use of technology to enhance learning within Higher Education it was anticipated that there would be quite a range of e-learning / computer assisted learning activities discussed in programme specifications. In fact, not all professional areas seem to stress this and not all programmes equally within professional areas. In general, there is a range from using ICT for information searching and storing of programme information, to self-study activities and then fully fledged online teaching, with group activities, wikis, quizzes and online assessment. However, there were fewer programmes which detailed the more developed approaches to online or e-learning.

For example, within Medicine e-learning is only mentioned in detail at under-graduate level. There is a recommendation in the Foundation Curriculum, but no great mention within the STP programmes. Dentistry had fewer mentions at under-graduate level and some mention of e-learning within the STP programmes. Pharmacy again gives e-learning some mention, but without a great deal of detail provided.

Healthcare Science has an interesting combination of using technology for assessments, with some listing also of using technology to provide videos and other information for students, but little discussion of the more innovative uses of e-learning discussed in other professional areas. But alongside this there is a mention of mobile-learning (m-learning) which is a more recent phenomenon. As Healthcare Science curricula are currently under

development it is not yet clear how this picture will change and the degree to which the recommendation for m-learning is taken up by HEIs.

Of the Allied Health Professions the ones with the most detail about e-learning are Paramedic Science and Occupational Therapy. Most of the other programmes sampled for the other professions in this category mention e-learning to some degree, except for Practitioner Psychology and Prosthetics/ Orthotics.

Nursing is the one area that has the most detail in the programmes sampled, mentioning the use of wikis, online discussion forums, collaborative activities, podcasts, videos, as well as self-directed learning, webinars and online assessments. There is also an emphasis in one example of learning how to communicate with others online, as a preparation for future work. It may well be that for some of the professions the focus on IT or digital literacy in the learning outcomes, particular at under-graduate level is part of the reason for a greater focus on e-learning.

4. Discussion and implications

The main conclusions in relation to the research questions are that there are more similarities than differences in the ways programmes are structured, the main theoretical ideas on learning that underpin them, the key aims and the types of learning and assessment methods used. Differences are either a matter of degree or linked in some cases to the level of the qualification required. There is clearly sufficient common ground for professions to understand each other's approaches to learning. In fact, there is a high level of similarity in the language used in the documentation across the professions. Many of the aims, teaching and learning activities and assessment strategies could almost be interchangeable. Clearly the detail of the learning outcomes and specific content will reflect the different specialist knowledge and skills within each professional area, but again there is much in common at this level, particularly in relation to professional attributes and generic / transferable skills. This should make it easier for inter-professional learning to take place, and reassure supervisors in particular, that the skills they have developed within their particular professional area can be used for the benefit of other professionals. If learning is

perceived as about process and not only product then the role of the educator also changes to one of facilitating reflective, critical thinking, of giving feedback and of helping learners become autonomous. These skills do not need to be content specific.

In terms of the differences, one area that is worth exploring in more detail is the different emphasis on inter-professional learning between professions, particularly in relation to discussions of inter- or multi-professional working, team working and leadership. It may be that there are particular perceptions of leadership within some of the professional areas that are more compatible with inter-professional learning than others. Clearly this has implications for whether or not inter-professional learning is accepted as a valid strategy in all professions.

The difference in level of qualifications required also means that any inter-professional education needs to take into account the degree to which particular skills, such as research skills, need to be developed across the professions. Although it is interesting to note that a number of Bachelor programmes do require dissertations or a project, others focus more on understanding research, so Inter-professional groups with students working to different level requirements would require educators to consider issues of differentiation, for example.

A final point to make is that theories of learning are not explicitly discussed in most of the examples studied, which means that it is possible that educators do not entirely understand the principles upon which the teaching and learning strategies are recommended. It is interesting, from a theoretical standpoint, that the specificity of competency / outcomes based approaches is consistently married to a more constructivist understanding of learning, as one could argue that there is a tension in this combination. The former reflects more of a product view of curriculum and learning, and the latter more of a process view. Product views of curriculum are focused on being structured to produce defined outcomes and are more likely to imply that learning is value free, with a degree of transmission of knowledge and skills to learners. The process view emphasises the learners' engagement with the content, by encouraging interaction and reflection. This allows for more debate over what is known and gives learners more autonomy (see Ross 2000).

The debate about the value and consequences of the use of specific learning outcomes is one that goes wider than healthcare education (see Hussey and Smith 2002, Souto-Otero

2012). It is partly a question of the type of learning outcomes. For thinking and problem solving one can argue that behaviourial outcomes are not as appropriate (see Stenhouse 1975). It is also noticeable also that there are fewer examples of learning outcomes specifically for values or attitudes in the curricula or programmes sampled in this study, possibly reflecting the difficult of specifying and knowing how these can be measured in any objective sense.

Given the potential tensions between the various influences on curricula and programme design it would be helpful, therefore, for those using the curricula or programme documentation to have a clear understanding of why certain approaches are recommended and how they are seen as complementing each other. For example, how does one reconcile a PBL approach and specific learning outcomes (see McKimm 2003)? PBL is arguably a highly suitable approach for inter-professional education, given its focus on solving problems which are likely to require expertise from different sources. It requires the development of the generic and transferable skills all the professions emphasise, and the tutor acts more as a facilitator than an expert. But educators need to understand how this is designed to help meet the learning outcomes and competences required by the particular professions. Also being able to understand the principles underlying an approach helps transfer those approaches to another context, such as when educating other professionals.

This study concludes therefore that there is far more in common in terms of approaches to learning across the professions than might be assumed, and a great deal in common in terms of standards and generic professional skills. As Austerberry and Newman (2013) also conclude, thinking of the educator more as a facilitator of learning, rather than only as a gatekeeper or assessor of specialist knowledge and skills, may help open up the possibilities for more inter-professional education.

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GMC (July 2008 updated April 2010) Standards for curricula and assessment systems

GMC (Feb 2011) The Trainee Doctor: Foundation and specialty, including GP training

HCPC Standards of Proficiency for each of the Allied Healthcare professions

Intercollegiate board for Intensive Care Medicine (2010 Ed2) Curriculum for a CCT in Intensive Care Medicine

ISCP (August 2010) Cardiothoracic Surgery Curriculum

Joint Royal Colleges of Physicians Training Board (August 2009 Amendments August 2012) Speciality Training Curriculum for General Internal Medicine

Joint Royal Colleges of Physicians Training Board (August 2010) Speciality Training Curriculum for Genitourinary Medicine

Joint Royal Colleges of Physicians Training Board (August 2010, Amendments 2012) Speciality Training Curriculum for Paediatric Cardiology

Committee of Postgraduate Dental Deans and Directors UK (COPDEND) (2013) Interim Dental Foundation Training Curriculum and Assessment Framework Guidance 2013-2014

Committee of Postgraduate Dental Deans and Directors UK (COPDEND) (June 2013) The Dental Gold Guide. Third Edition: A Reference Guide for Postgraduate Dental Specialty Training in the UK.

Committee of Postgraduate Dental Deans and Directors UK (COPDEND) 2013) Standards for Dental Educators

General Dental Council (nd) Preparing for practice Dental team learning outcomes for registration

General Dental Council (Nov 2012) Standards for Education: Standards and requirements for providers of education and training programmes

General Pharmaceutical Council (May 2011) Future pharmacists Standards for the initial education and training of pharmacists

Modernising Scientific Careers:

- 2011/12BSc (Hons) in Healthcare Science (Life Sciences): Learning Outcomes and Indicative Content

- 2011/12 Practitioner Training Programme BSc (Hons) in Healthcare Science: Clinical Engineering (Physical Sciences and Biomedical Engineering): Learning Outcomes and Indicative Content

- 2011/12 Practitioner Training Programme BSc (Hons) in Healthcare Science: Medical Physics Technology (Physical Sciences and Biomedical Engineering): Learning Outcomes and Indicative Content

- 2012/13 Scientist Training Programme Work Based Training Learning Guide: Blood Sciences

- 2012/13 Scientist Training Programme Work Based Training Learning Guide Clinical Engineering

- 2013/14 Practitioner Training Programme BSc (Hons) Healthcare Science: Work Based Training Learning Guide Clinical Engineering

- 2013/14 Practitioner Training Programme BSc (Hons) Healthcare Science: Work Based Training Learning Guide: Life Sciences

- 2013/14 Scientist Training Programme MSc in Clinical Science Curriculum: Blood Science

- 2013/14 Scientist Training Programme MSc in Clinical Science Curriculum: Clinical Engineering

- 2013/14 Scientist Training Programme MSc in Clinical Science Curriculum: Clinical Pharmaceutical Sciences

- 2013/14 Scientist Training Programme Work Based Training Learning Guide: Clinical Pharmaceutical Sciences

National Examining Board for Dental Nurses (Sept 2013) Certificate in Orthodontic Nursing: Approved Course Providers

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Royal College of Psychiatrists (2010) WPBA Guide for Core Psychiatry Training

Royal College of Psychiatrists 2013 (GMC Approved 01 July 2013) A Competency Based Curriculum for Specialist Core Training in Psychiatry

Royal college of surgeons (August 2013) Specialist Training in Trauma and Orthopaedics Curriculum

Specialist Advisory Committee (SAC) for the Additional Dental Specialities (nd) Curriculum for Specialist Training Programmes in Dental and Maxillofacial Radiology

Specialist Advisory Committee (SAC) in the Additional Dental Specialties (July 2010) Speciality Training Curriculum for Oral Medicine

Specialist Advisory Committee for Dental Public Health, The Faculty of Dental Surgery, The Royal College of Surgeons of England (February 2010) Speciality Training Curriculum Dental Public Health

The Academy of Medical Royal Colleges (2012) The Foundation Programme Curriculum

The Intercollegiate Committee for ACCS Training (ICACCST) (April 2012) Acute Care Common Stem Core Training Programme: Curriculum and Assessment System

The Royal College of Anaesthetists (August 2010) Curriculum for a CCT in Anaesthetics *Edition 2*

The Joint Committee for Postgraduate Training in Dentistry, The Specialist Advisory Committee in Orthodontics (Sept 2010) Specialist Training in Orthodontic Subjects Curriculum and Specialist Training Programme in Orthdontics: Aims, Content, Objectives

Appendix 1: List of Higher Education Institutions (HEIs)

Anglia Ruskin University

Barts and The London, Queen Mary's School of Medicine and Dentistry

Birmingham City University

Bournemouth University

City University, London

De Montfort University

Imperial College London

Keele University

King’s College London

Kingston University

Leeds Metropolitan University

Liverpool Hope University

Liverpool John Moores University

London Metropolitan University

London South Bank University

Manchester Metropolitan University

Newcastle University

New College Durham

Oxford Brookes University

Plymouth University

Royal Holloway, University of London

Sheffield Hallam University

St Georges, University of London

Suffolk University

Teesside University

The Open University

The University of Northampton

University College London

University of Birmingham

University of Brighton

University of Chester

University of Central Lancashire

University of Cumbria

University of Derby

University of East Anglia

University of Hertfordshire

University of Leeds

University of Manchester

University of Oxford

University of Portsmouth

University of Reading

University of Roehampton

University of Salford

University of Sheffield

University of Southampton

University of St Mark and St John

University of the West of England

York St John University

Appendix 2: List of websites accessed

Please note that individual HEI websites were accessed for particular courses, but they are not listed here in order not to identify particular HEI courses in this study. A list of HEIs is provided in Appendix 2. Websites are grouped according to professional area in the order they are analysed on the accompanying excel spreadsheet

NHS Careers course finder site

http://www.nhscareers.nhs.uk/courses/

Medicine

Academy of Medical Royal Colleges

http://www.aomrc.org.uk/links/royal-colleges.html
http://www.aomrc.org.uk/education-a-training/curriculum-and-framework/curriculum.html

Acute Care Common Stem
http://www.accsuk.org.uk/curriculumfolder/2010curriculum.html

General Medical Council
http://www.gmc-uk.org/education/index.asp

Intercollegiate Surgical College Programme
https://www.iscp.ac.uk/

The College of Emergency Medicine
http://www.collemergencymed.ac.uk/

The Faculty of Intensive Care Medicine
http://www.ficm.ac.uk/curriculum-and-assessment

The Royal College of Anesthetists
http://www.rcoa.ac.uk/

The Royal College of General Practitioners

http://www.rcgp.org.uk/gp-training-and-exams/gp-curriculum-overview.aspx

The Royal College of Obstetricians and Gynaecologists

http://www.rcog.org.uk/education-and-exams/curriculum/core-curriculum

The Royal College of Paediatrics and Child Health

http://www.rcpch.ac.uk/

http://www.rcpch.ac.uk/training-examinations-professional-development/postgraduate-training/general-paediatric-training/gen

The Royal College of Pathologists

http://www.rcpath.org/training-education/specialty-training/histopathology -

The Royal College of Physicians training board

http://www.jrcptb.org.uk/trainingandcert/Pages/Introduction.aspx

The Royal College of Psychiatrists

http://www.rcpsych.ac.uk/traininpsychiatry/trainees/curricula.aspx

The Royal College of Radiologists

http://www.rcr.ac.uk/

The Royal College of Surgeons England

http://www.rcseng.ac.uk/courses/course-search/courses-a-z

Nursing and Midwifery

Nursing and Midwifery Council

http://www.nmc-uk.org/

Dentistry

Committee of Postgraduate Dental Deans and Directors

http://www.copdend.org/

General Dental Council

http://www.gdc-uk.org/

Faculty of Dental Surgery (Royal College of Surgeons) and in particular the joint committee for specialist training in dentistry

http://www.rcseng.ac.uk/fds

Dental Nursing

British Association of Dental Nurses

http://badn.org.uk/

National Examining Board for Dental Nursing

http://www.nebdn.org/

Pharmacy

Faculty of Pharmaceutical Medicine

http://www.fpm.org.uk/trainingexams/pmst/trainingland

General Pharmaceutical Council

http://pharmacyregulation.org/

Healthcare Science

Academy of Healthcare Science

http://www.ahcs.ac.uk/

British Society of Hematology

http://www.b-s-h.org.uk/

British Society of Histocompatability and Immunogenetics

http://www.bshi.org.uk/

Institute of Biomedical Science

http://www.ibms.org/

Modernising Scientific Careers

http://www.nhscareers.nhs.uk/explore-by-career/healthcare-science/modernising-scientific-careers/

National School of Healthcare Science

http://www.nshcs.org.uk/

The Association for Clinical Biochemistry and Laboratory Medicine

http://www.acb.org.uk/

Allied Health Professions

Healthcare Professions Council

http://www.hpc-uk.org/

Art Therapy

http://www.baat.org/training.html

British Association of Dramatherapists

http://badth.org.uk/

British Association for Music Therapy

http://www.bamt.org/

British Dietetic Association

http://www.bda.uk.com/ced/curriculum.html

British and Irish Orthoptic society

http://www.orthoptics.org.uk/

British Association of Occupational Therapists and College of Occupational Therapists

http://www.cot.co.uk/

College of Paramedics

https://www.collegeofparamedics.co.uk/home/

Chartered Society of Physiotherapy

http://www.csp.org.uk/

The College of Podiatry

http://www.scpod.org/

The British Chiropody and Podiatry Association

http://www.bcha-uk.org

The Institute of Chiropodists and Podiatrists

http://www.iocp.org.uk/

The Alliance of Private Sector Chiropody and Podiatry Practitioners

www.thealliancepsp.com

British Psychological Society (BPS)

www.bps.org.uk

Association of Educational Psychologists

www.aep.org.uk/

The British Association of Prosthetists and Orthotists

http://www.bapo.com

Society and College of Radiographers

http://www.sor.org/

The Royal College of Speech and Language Therapists

http://www.rcslt.org/

http://www.rcslt.org/about/work_with_universities/curriculum_guidelines