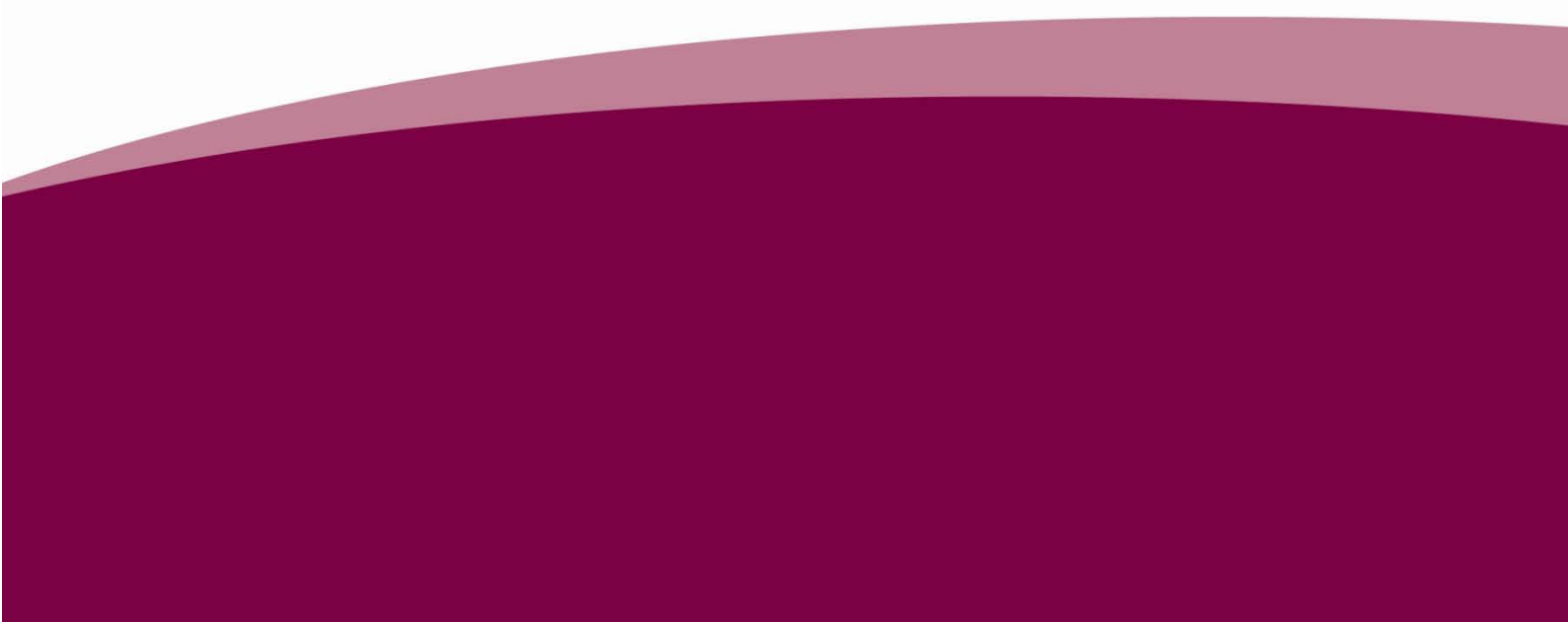# ANIMAL PROCEDURES COMMITTEE

September 2010

Guidance on the roles and responsibilities of those involved in the delivery and accreditation of training under the Animals (Scientific Procedures) Act 1986

The A P C
Animal Procedures Committee

ANIMAL PROCEDURES COMMITTEE EDUCATION & TRAINING SUB-COMMITTEE

Guidance on the roles and responsibilities of those involved in the delivery and accreditation of training under the Animals (Scientific Procedures) Act 1986

September 2010

Contents

1. Historical Overview and Aims

1.1 Overall aims

1.1.1 The aim of this document is to define what is expected from bodies accepted for accreditation of training courses for personnel working under the Animals (Scientific Procedures) Act 1986, and to offer guidance as to the expectations that these bodies should have of course providers. In the UK scientists and technicians working under the Animals (Scientific Procedures) Act 1986 are trained by the Home Office modular system. It is necessary to be confident that training standards are consistently high so as to protect animal welfare, ensure the law is implemented correctly, that ethical issues are understood and societal concerns taken into account. This advice was requested by the accrediting bodies and is meant to be considered as guidance, not instruction or compulsion.

1.2 Historical overview

1.2.1 Training for applicants for personal licences has been mandatory since 1994 and for new project licence applicants since 1995. The Home Office Policy on the Education and Training of Personnel under the Animals (Scientific Procedures) Act 1986 is set out in Appendix F of the Guidance on the Operation of the Act[1]. The Policy provides an outline syllabus for training. Inevitably, variable interpretation and implementation of the policy have occurred as issues arose in practice. Some clarifications of application of the original policy have developed over the intervening period, which are outlined in Appendix 3.

1.2.2 The Policy requires that all training programmes are accredited under schemes recognised by the Home Office. The purpose of accreditation is to achieve common and high standards for animal use which promote best practice in animal welfare and use and command public and parliamentary support. This can best be achieved by having accreditation carried out by independent bodies which are not associated either with the body providing the training or with the Home Office.

1.3 The role of the APC

1.3.1 The Animal Procedures Committee is a statutory committee which acts as an independent source of advice to the Secretary of State. In its report of 1993[2], the Committee accepted that given the range of expertise available to the Committee and its function as an independent adviser to the Secretary of State, it would be appropriate for the Committee to advise the Secretary of State on acceptance of accreditation schemes. However, it has no direct powers to implement any of its recommendations, as it works exclusively as an advisory body to the Home Secretary.

1.3.2 In the same year, an APC Working Group was set up with a remit to consider all applications for recognition of accreditation schemes by the Home Office and to offer advice to the Home Secretary via the Animal Procedures Committee. The working

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[1] http://www.archive.official-documents.co.uk/document/hoc/321/321.htm
[2] http://www.apc.gov.uk/reference/ar93.pdf

group agreed criteria to be used for determining the acceptability of an accreditation scheme. The following are direct quotes from the working group report:- [3]

- "*Accreditation of training programmes should be carried out by independent bodies which are not directly associated with the body providing the training*

- *The proposed scheme should have a syllabus which at least meets the requirement set by the Home Office in its policy statement of February 1993*

- *The means of assessment of trainees should be such as to "ensure that participants have adequate understanding of their responsibilities and sufficient knowledge of animal husbandry that good welfare practices will be assured"*

- *The scheme should be able to cater for a wide variety of users and species unless it is restricted to specific user groups*

- *The scheme should set out clearly how it will be administered, how courses will be supervised and monitored, how long accreditation will last and how trainees will be notified of their performance in the course.*"

1.3.3   The 1993 APC Working Group proposed the continuing oversight of the accrediting bodies, by attending joint meetings of the accrediting bodies operating the schemes as observers and attending training courses to satisfy themselves that acceptable standards are obtained.

1.3.4   In 2003, APC embarked on a review of modular training. The remit of the current Education and Training Subcommittee that superseded the 1993 Working Group has been;

> *"To advise on the requirements for training and education of those who hold responsibilities under the Animals (Scientific Procedures) Act 1986 or who carry out duties under the controls of the Act. In doing so, to liaise with a range of bodies, including the two* bodies which accredit licensee training courses."*

In February 2006, the Education and Training Sub-Committee of the APC published its report on the first part of its review of modular training. The seven recommendations received broad agreement from the Parliamentary Under Secretary of State for the Home Office [4]

*now three accrediting bodies

1.4   Accrediting Bodies

1.4.1   Three bodies are approved for the accreditation of courses for personal and project licence applicants: The Universities' Training Group (UTG), the Society of Biology (formerly the Institute of Biology), and the Scottish Accreditation Board (SAB). Additionally, the Institute of Animal Technology (IAT) has been approved as an accrediting body for training of Named Animal Care and Welfare Officers (NACWOs). During the process of the Education and Training Subcommittee review, the accrediting bodies indicated that they would welcome guidance on what was expected of them, and on the required learning outcomes that should be achieved from the Home Office modules.

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[3] http://www.apc.gov.uk/reference/ar93.pdf
[4] http://www.apc.gov.uk/reference/382765_HC41_web.pdf Annex L

1.4.2   It is important that efforts are made to maintain consistency across courses. It is essential that clear guidance is given to accrediting bodies as to what is expected of them and the level of achievement required from the courses they accredit. The level of achievement should be the same across all accredited courses. In July 2009 at a joint meeting of Accrediting Bodies to which representatives of the APC Education and Training sub committee were invited, reached an agreement that annual reports could be submitted to the Home Office for comparative review. Appendix 6 of the guidance paper suggests categories that might be included as part of an annual report's content.

1.4.3   The interaction between regulators, advisory body, course providers and the Accrediting Bodies is shown in Figure 1.
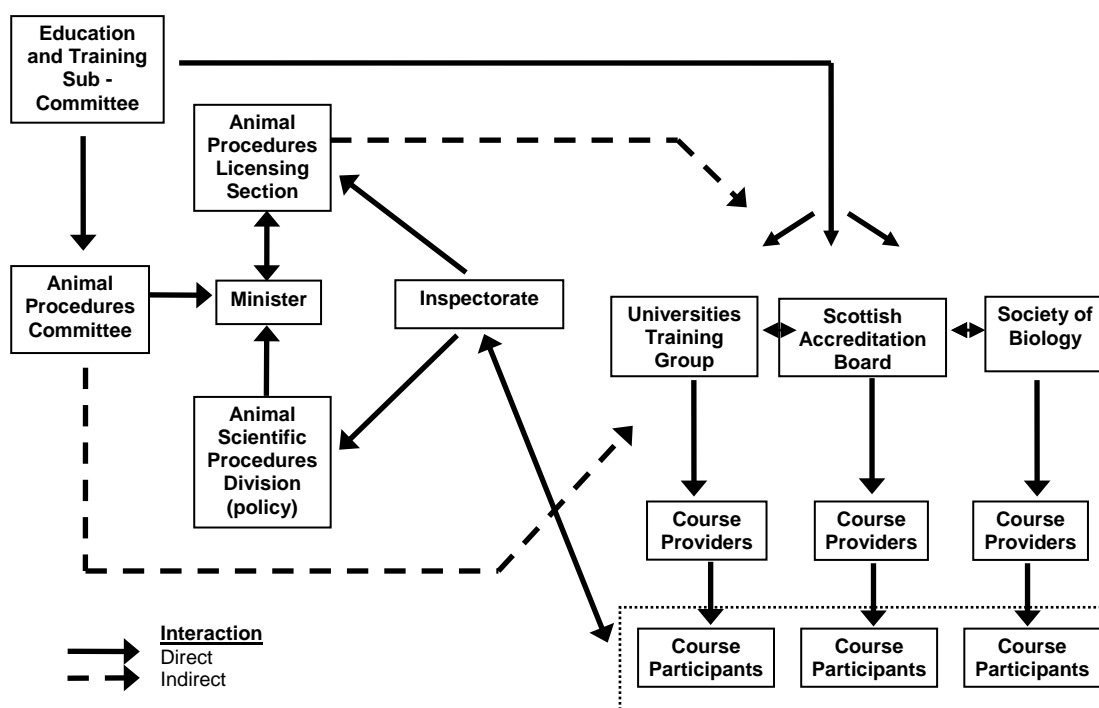
Figure 1

1.5   Points to Note

The APC is aware that accrediting bodies by their very nature are not involved in training, this being largely the responsibility of course providers. However for the purposes of this report the Committee make the assumption that the accrediting bodies are best placed to take a guiding role in the provision of training.

This document represents the Committee's opinions of how the accreditation of modular training under Animals (Scientific Procedures) Act 1986 could evolve based on Committee members experience, evidence gained through consultation, taught course comparisons and suggestions of best practice processes from other accredited courses.

2. The Role of the Accrediting Body

2.1 Consistency in Level of Achievement

2.1.1 Accrediting bodies are responsible for defining the required level of achievement for accredited courses. Each accrediting body has the power to issue certificates to candidates meeting the required standard, but with this power comes the responsibility for ensuring that the defined standards are met and that courses are of an appropriate quality.

Aims, learning outcomes and assessment methods for the different modules should be described in a course framework. See Appendix 1 of this document for an example course framework.

2.2 Policy and procedures

2.2.1 Accreditation bodies should make their policies and procedures available to training providers and other interested parties. Accrediting bodies should also ensure that all aspects of this APC guidance paper are considered by themselves and by course providers.

2.2.2 Accrediting bodies should have access to up to date and authoritative records of courses they accredit and accrediting bodies should be prepared to provide such information if requested by the Home Office.

- The name of the course organiser
- Contact details of the course organiser
- The modules covered and intended audience
- Proposed course frequency
- Names and brief CVs of course tutors*
- Location and physical facilities provided by the trainer or host institution*
- visual aids/learning materials provided*
- Information on course materials/handouts provided*
- Time allotted to the course
- Methods of assessment.

    * Maintenance of these records can be delegated to the course providers, but must be made available to the accrediting body on request.

An accrediting body is responsible so far as is reasonably practicable, for ensuring that any information it provides relating to a course it accredits is up to date. Accrediting bodies should satisfy themselves that course providers ensure that potential participants cannot be misled about the nature and standing of any courses offered. In addition, accrediting bodies should have provision for the Freedom of Information Act where applicable.

2.2.3   The policies and procedures of accrediting bodies should be independent and not subject to bias.

2.2.4   The accrediting body should set out what it expects from course providers. Accrediting bodies have a duty to ensure that course providers know what is expected of them and that these expectations continue to be met. Such statements should include:

- Details of any records kept by the Course Organiser and submitted to the accrediting body
- Details of minimum learning outcomes to be addressed during training and guidance on variety of learning opportunities to be provided (practicals, group work etc)
- Guidance on oral, written and practical assessment of candidates to be made, both within and after courses
- Proposed frequency for accreditation visits and procedures for regular monitoring and review of quality
- Guidance on the use of and access to candidate feedback forms
- The responsibilities of Course Organisers towards course participants
- Arrangements if either side wishes to terminate the accreditation agreement

2.3   Resources

Accrediting bodies should satisfy themselves about the standing of the course provider and that the provider can fulfil the requirements. There should be sufficient appropriately trained and qualified staff, and adequate facilities to ensure that training of an appropriate standard can be delivered.

2.4   Quality and standards of training

2.4.1   Although planning and delivery of material is delegated to course providers, the accrediting body is responsible for monitoring the quality and standard of training generally and should be able to satisfy itself that any delegated responsibility is being properly discharged. It should therefore be able to verify and make judgements on the range and suitability of the learning opportunities being provided, and that the learning outcomes covered at least meet the minimum requirement in the APC Module 1 - 4 report.

2.4.2   It may be appropriate on occasion for course providers to draft in individual experts to cover training in handling of unusual species. In these cases the accrediting body is still responsible for monitoring to ensure that the quality and standard of training is acceptable. The accrediting body should therefore issue guidelines for course providers on what is expected from external expert trainers, and check that these have been appropriately applied.

2.4.3   The accrediting body should ensure course providers supply prospective candidates with a course framework for each module and that reference is made to the minimum qualifications required.

The course framework should give clear information on the nature of the course and its relationship to the licensing requirements. It should also provide information about the appropriate contact for more details. The aims and learning outcomes should be set out, together with the proposed methods of teaching, appropriate reference

material, approximate time required to complete the module and the proposed method of assessment. Potential participants must be able to identify that courses run by different providers are of equivalent standard, even if the teaching methods are different. Aims and learning outcomes should be periodically reviewed for continuing validity and relevance.

Note

Applicants for personal licences are currently required to possess 5 GCSEs at grades A-C or equivalent including in a biological science. Exemptions to this requirement may be considered, for example if there is evidence of relevant comparable education or experience. There is clear guidance in Section 6.5 of the Guidance on the Operation of the Animals (Scientific Procedures) Act 1986. Such cases should also be discussed with the local HO Inspector. Where there are participants for whom English is not the first language, an assessment should be made before the course, of their competence in English. Participants who are unable to understand the course will be at a disadvantage and may not grasp fully their responsibilities under the Act. Certificate Holders are reminded that they should ensure that all candidates going through a Licensee Training Course at a Designated Establishment must have sufficient grasp of English to ensure they can understand the materials presented.

2.4.4   Accrediting bodies should ensure that assessment methods are sufficiently robust. Assessments should be consistent within and across institutions and between courses accredited by different bodies, and should be at a level appropriate to the stated learning outcomes (see *example* in Appendix 4 Level of Learning Outcome). Accrediting bodies should liaise with each other to ensure that standards of assessment are equivalent and to maintain the quality of the output. Standards should be set for the conduct of written and practical assessments, and procedures put in place to ensure that they are adhered to (see Part 4 for more information on assessment).

2.5   Accreditation visits

2.5.1   Assessment and auditing of courses is essential to maintaining their suitability and the credibility of teaching staff. Accreditation visits are a key feature of this process and should be used to determine whether the quality and standard of training provided are appropriate. Course assessments should identify if the intended learning outcomes are covered by the teaching and associated handout material, and whether the assessment covers a suitable sample of the desired learning outcomes. The outcomes-based approach to assessment has an emphasis on transparency, and to establish the relationship between learning outcomes, teaching materials and other modes of training. Accreditation visits should be carried out at appropriate intervals and must include feedback from course participants on the quality/suitability of the course.

An accrediting body must ensure that their appointed assessors are independent, adequately prepared/briefed and are fully aware of the relevant factors.

2.5.2   As an example, the content of an accrediting body's course assessment might include.

Initial report to the accrediting body.

- the overall conception of the course; its structure, conceptual framework, balance, coverage, workload and level;

- the design of the teaching skills and assessment; the effectiveness of the course materials as teaching aids in the context of their own experience;

- the likely effectiveness of the course materials in terms of meeting the needs of a diverse body of participants;

- evaluation of the extent to which the proposed course meets the defined standard (are required learning outcomes addressed);

- the effectiveness of multi-media materials and software (if used);

- in courses with an animal handling component, the effectiveness of the arrangements for teaching practical elements;

- robustness of proposed methods of assessment during and at the end of the course and relationship to the intended learning outcomes.

In the event that the quality of a course was found to be unsatisfactory, following any remedial action an accrediting body should carry out a further follow-up report. Ideally this should be carried out in line with existing plans for reaccreditation.

Courses will normally be reaccredited after an interval of no greater than five years.

Reaccreditation Report

- detailed comment on all the matters identified in the *Initial Report* that should have been addressed;

- overall achievement of the course aims;

- the effectiveness of the teaching material;

- the final outcome of the course;

- areas for further improvement (if appropriate).

2.6   Certificates

2.6.1   The Accrediting body should have sole authority to issue training certificates and must ensure and emphasise the importance of security in relation to the possession of such certificates. Certificates should record the name and location of the course provider, and all information that is necessary for a full understanding of the participant's achievement.

3. The Role of the Course Organiser

3.1 Information provided to participants

3.1.1   The course organiser should provide participants with a course framework setting out the roles of the course organiser, descriptions of the units and modules to show the intended learning outcomes and the teaching, learning and assessment methods, the timing of the course and a clear schedule for delivery of the course and the assessment. Where practical, details of the course should be circulated to prospective participants before the course is delivered and/or course descriptions could be made available on a suitable secure web site.

3.1.2   Information should be provided about assessment; participants should have clear information on the ways in which their achievements will be judged. Course providers should consider providing informal feedback and guidance to participants during the course, to aid their learning and to illustrate likely standards for the formal assessment. Information on assessment methods should be included in the course framework.

3.1.3   Participants should be given clear and realistic guidance setting out their responsibilities as learners. This should include guidance on what is expected to be gained through self-directed learning, collaborative learning such as discussions with other participants, and through supported learning. Guidance should identify whether an activity is compulsory or not, and the ground rules for communication with tutors and/or other course participants. **It should also be made clear that the course is an <u>introduction</u> to being a licensee and that further supervision and development will be required.**

3.2 Learner support and feedback

3.2.1   Course participants should be provided with support material and assistance, such as tutorials or web-based conferences, and clear up to date information about the support available, including likely response times. Support can be provided face to face, locally or online for the duration of the course or until the assessment and feedback have been completed.

3.2.2   Where there are participants for whom English is not their first language an assessment should be made before the course of their competence in English. Participants who are unable to understand the course will be at a disadvantage and may not fully grasp their responsibilities. The course provider should be encouraged to discover from the sponsoring institution that people have sufficient command of English to understand the material presented.

Pre-course preparation can be used to encourage candidates to undertake essential background reading or viewing of audiovisual programmes, and provide an introduction to the ethical issues surrounding animal use. If a participant enrolling on a course does not fulfil the minimum educational requirement for personal licensees, course providers may wish to refer them to the Home Office for advice before enrolling them on a course. It may be appropriate to identify a suitable contact at the participant's home institution that is responsible for ensuring that induction and preparation have been successful before a participant is allowed to enrol on the course.

3.2.3 It is good educational practice to obtain feedback from participants either immediately after a course or upon completion of the assessment, to determine whether the course met expectations and has been sufficient for their subsequent needs. It is a measure of success of the course if the knowledge and skills acquired influence what the participant does subsequently, and this can only be determined by obtaining feedback ideally at a later stage. Course providers should instigate an active review process of the effectiveness of the course based on feedback from a sample of course participants. The review process should also be open to scrutiny by the accrediting body.

3.3 Structure of courses

3.3.1 Courses may use a combination of formal and informal teaching, being intensive over one or two days or part time over several days. The modular system is designed to be flexible so it can be tailored to individual needs. However, it is important to maintain standards and ensure that sufficient time and resources are allocated to training. It is consistency of output that is required, rather than uniformity in the process of training.

3.3.2 People learn in a variety of different ways (See Appendix 2 of this document for an overview of learning styles), and it is essential that courses provide a variety of learning opportunities appropriate to different learning styles. A course utilising exclusively a lecture format may be able to convey a large quantity of information in a short time, but interaction is very limited and retention of the information can be poor. Experiential learning where participants take a more active role is often a more effective method of learning. Suitable learning activities include interactive group discussions, practical sessions, role playing or problem solving exercises. Such activities are most effective with small groups of 6-8 participants, and consideration should be given to including such small group activities in training programmes if not currently being used. This is of particular concern with flexible and distance learning programmes, where interaction with the tutor and other participants is limited. Consideration should be given to the innovative uses of interactive learning tools for taught parts of the courses.

3.4 Resources

3.4.1 Staff engaged in training should be experienced both in their subject matter, and ideally, as trainers. Where possible, they should have been trained in educational principles and practice.

Suitable personnel might include veterinary surgeons, senior technicians, ethicists and scientists. In all cases the trainer with overall responsibility for the course should be clearly identified to the participants, and should be the point of contact for enquiries and appeals.

3.4.2 Up to date, relevant course material is a very useful resource that participants can refer to after the course has finished. It should be utilised during the training, so that participants can identify readily where specific information can be found, how it fits in to the course and for use in interactive teaching activities. Course material can be provided as bound or loose notes, handbooks, or in electronic form. There should be easy access to key documentation such as the Guidance on the Operation of the Animals (Scientific Procedures) Act 1986 and the Codes of Practice. Continued access to online facilities should be encouraged after the training has ended.

3.4.3   The time needed to deliver the learning outcomes to the required standard will depend on the needs of the individual participants and their institution, thus it is not appropriate to specify minimum times to be spent on each module. Time should be allocated to allow for the provision of different sorts of learning opportunity, including practical and interactive elements. As a guide, it is likely that formal tuition for each core module will take 4-8 hours, with a variable period of private study and practical experience, depending on the background and experience of the participants.

3.4.4   Where e-learning is used or a need for remote access to assessment is required, it is necessary to ensure that suitable systems are in place to verify the origin of any assessed work. Participants need to be confident that their work will not be lost or misidentified. Administrative and electronic systems used for assessment purposes must be sufficiently robust and reliable and free from the possibility of external interference. Where online records are used there should be adequate provision for storage and backup of records.

4. Assessment of course participants

4.1 Responsibilities of Accrediting Bodies and Course providers

4.1.1 Accrediting bodies are responsible for the standard and format for assessments. Course providers are responsible for the conduct of assessments. The accrediting body should determine the selection criteria for those who will carry out oral or practical assessments. Course providers should then identify suitable personnel based on these criteria. The accrediting body should check the suitability of assessors as part of the accreditation process.

4.2 Assessors

4.2.1 Assessors should themselves be able to carry out assessable tasks or demonstrate knowledge to the required standard. They should be familiar with the standards required, and be able to make judgements about the course participants based on these standards. The expertise of trainers and assessors is the key factor underpinning valid and reliable assessment.

4.3 Assessment

4.3.1 Learning outcomes fall into at least three areas:

- o Knowledge and understanding
- o Practical skills and attributes
- o Transferable skills and attitudes

An explanation of learning outcomes and their assessment is detailed in Appendix 4 of this document. Any method of assessment used should be appropriate to the type of learning outcome, for example, animal handling is generally best examined by a practical examination using live animals, attitudes may be assessed through group discussions or role play, and factual knowledge can be examined by using written or verbal questions. Examples of a learning assessment tools can be found in tables 1 and 2 of this report.

4.3.2 Written examination questions should be suitably robust, and moderated to ensure validity and reliability.

4.3.3 An assessment of participants' knowledge <u>and</u> understanding requires very careful consideration particularly as some learning outcomes are not suited to question and answer validation.
Where multiple choice type questions are used for assessment the APC is of the opinion that they should ideally be of the 'single best answer' type. Further explanation on the application and use of MCQs is outlined in Appendix 5 of this document.

4.3.4 Assessment of practical skills can be subjective and open to challenge. However, it can be made more objective by identifying relevant criteria to be assessed, and assigning a mark for the participant's abilities in each area with the aid of descriptors. This can be facilitated by the use of assessment grids, such as illustrated in the tables below. The use of such grids may reduce the potential for variability between assessors.

Table 1. An <u>Example</u> Practical Assessment Sheet

	Fail	**Refer**	**Pass**	**Good pass**	**Excellent**
Element Assessed	Criteria	Criteria	Criteria	Criteria	Criteria
Observation	Participant fails to notice obvious indicators of health and well being in environment	Participant notices some obvious indicators of health and well being	Participant notices some obvious and subtle indicators of health and well being, and can discuss at a superficial level	Participant notices obvious and subtle indicators of well being, and can discuss in some detail	Participant notices obvious and subtle indices of health and well being, and can discuss at length
Approach to animals	Participant is anxious and tentative and has difficulty approaching the animal	Participant is anxious but can approach the animal with some coaxing	Participant is not obviously anxious but approaches the animal tentatively	Participant is not anxious and is able to approach the animal with a degree of confidence	Participant is confident and approaches the animal immediately and in a relaxed manner
Theoretical knowledge	Participant demonstrates little or no theoretical knowledge of biology and husbandry for the species	Participant demonstrates superficial knowledge of biology and husbandry	Participant demonstrates knowledge of key aspects of biology and husbandry	Participant demonstrates detailed knowledge of biology and husbandry	Participant demonstrates detailed understanding of biology and husbandry and can discuss at length
Animal stress	Animal makes obvious signs of distress at being handled, such as vocalisation and struggling	Animal makes some signs of distress with significant struggling	Animal is mostly calm but with some struggling	Animal is calm with some struggling but settles	Animal is calm and relaxed and does not struggle
Handling ability	Participant is unable to demonstrate correct ways to hold the animal	Participant can demonstrate one way to hold the animal but cannot control it and cannot age and sex accurately	Participant can demonstrate one or more ways to hold the animal but not always securely	Participant can restrain the animal securely and can age and sex accurately on some occasions	Participant can restrain the animal securely in a variety of ways and can age and sex accurately

<u>Notes</u>
The above table could be used to provide feedback to candidates particularly those in the 'refer' or 'fail' categories.

Table 2. <u>Example</u> Assessment Grid for participants in training for group discussion

	Fail	**Refer**	**Pass**	**Good pass**	**Excellent**
Element Assessed	Criteria	Criteria	Criteria	Criteria	Criteria
Interaction	Participant fails to participate in group discussions	Participant interacts infrequently and demonstrates some understanding of key areas with some errors	Participant interacts adequately and demonstrates understanding of key areas	Participant interacts frequently, demonstrates understanding of key areas and can discuss in some detail	Participant interacts freely, is active in discussions and can discuss issues at length
Theoretical knowledge	Participant demonstrates little or no theoretical knowledge	Participant demonstrates superficial knowledge	Participant demonstrates knowledge of key aspects	Participant demonstrates detailed knowledge	Participant demonstrates detailed understanding and can discuss at length
Attitude and ethical awareness	Participant is unwilling to engage with issues	Participant participates to a limited extent but appears not to be aware of major issues	Participant engages to a limited extent but demonstrates some understanding of key issues	Participant is willing to engage and demonstrates some understanding of the issues	Participant engages freely and demonstrates sensitivity and awareness of issues

<u>Notes</u>
The above table could be used to provide feedback to candidates particularly those in the 'refer' or 'fail' categories. Where candidate's contributions are being assessed as part of a discussion group, the group should ideally comprise no more than six individuals.

Appendix 1

Example course framework

This is intended to be an example of how a course framework might be constructed. It is based on the proposed Module A, as described in the APC review of Modules 1-4[5].

Module A: Legislation, ethics and local rules

The aim of this module is to provide participants with a basic understanding of the legislative framework in which regulated procedures may be conducted in protected animals, and give them an opportunity to consider the ethical issues surrounding animal use for this purpose.

Teaching and learning strategy
This module will consist of:

i) Lectures;
ii) Group discussion of ethical issues;
iii) A practical demonstration of appropriate, and applicable health and safety equipment;
iv) Self directed study of course material;
v) Self directed study of problem sheets (where available).

It is anticipated that completion of this module would take approximately 18 hours, to include 10 hours of self directed study.

Assessment strategy
This module will be assessed by:

o Multiple choice questions;
o Tutors assessment of performance during group discussions, according to assessment grid (Table 2);
o Assessment by tutor of completed problem sheets.

Learning outcomes for this module:
Learning outcomes fall into three areas:

o Knowledge and understanding;
o Specific skills and attributes;
o Transferable skills and attributes.

This module covers a) legislation, b) ethics and c) local rules. On completion of the module it is expected that you will be able to:

a)   Legislation

- Relate which legislation; codes of practice and guidance pertain to the conduct of scientific procedures on animals, including Codes of Practice, Council of Europe Convention ETS 123, and EC Directive 86/609/EEC;

- Relate the purpose of ASPA as in the first line of the Act;

- Define protected animal, including respective stages of development;

- Define regulated procedure;

- Indicate that programmes of work fall into permissible purposes (as defined by ASPA 5.3);

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[5] http://www.apc.gov.uk/reference/apc-education-modular-training.pdf

- Describe the three levels at which control is exercised under the Act as stated in ASPA section 3 (Person, Project and Place);

- Indicate that the controls are exercised through assessment of applications for licences and certificates, inspection of work in progress, and reporting of non-compliance;

- Indicate that assessment of applications and monitoring of compliance is done by the Home Office Inspector and know how to contact him/her;

- Indicate that the PCDh is responsible for compliance at an establishment and that this responsibility may be exercised through the local ERP;

- State that the PILh bears primary responsibility for the animals they have applied regulated procedures to, and that they must make suitable arrangements for periods when they are absent;

- Indicate that if permission to delegate non-technical procedures to non-licence holders has been granted, the personal licence holder still bears responsibility;

- Outline scope of PILh responsibilities as defined by the PIL standard conditions, including record keeping and cage labelling, and appreciate how to apply themselves in this respect;

- Recognise what a personal licence is and what it looks like;

- Indicate that regulated procedures may only be carried out if part of a series of regulated procedures authorised by a project licence;

- State that it is the responsibility of the personal licence holder to check that appropriate authorities exist in personal and project licences before performing regulated procedure;

- Indicate which sections of a project licence describe what is authorised and why;

- Appreciate that key personnel (NVS, NACWO, PCDh, PPLh) have statutory duties and other responsibilities under ASPA;

- Define death as in ASPA;

- Indicate the circumstances in which protected animals should be killed;

- Relate that restrictions on the re-use of animals exist and state that re-use is strictly controlled;

- Relate that Schedule 1 exists for humane killing, that it is precise and that a CoP exists;

- Indicate that Schedule 2 exists, and identify implications for supply of animals;

- Indicate that Schedule 2A exists and outline its provisions;

- Indicate what an infringement is and that there are penalties attached;

- Indicate that other legislation may be relevant, and where to find further information.

b)   Ethics

- Appreciate that the ethical framework which underpins ASPA requires that programmes of work are justified by weighing likely adverse effects on the animals against the likely benefits;

- Appreciate that there are limits on what it is considered permissible to do within a research establishment and that there are cultural, national, temporal and institutional differences in this respect;

- Be able to identify ethical and animal welfare issues in their own work;

- State that when considering welfare issues, pain suffering distress and lasting harm should be interpreted in their widest sense and include the whole life experience of the animal;

- Define the three Rs, indicate what they are for, and how these relate to the ethical principles;

- Appreciate the need for, and be prepared to contribute to, a culture of care and appreciate the importance of having an appropriate attitude;

- Be responsible and willing and able to reflect on the consequences of their actions;

- Indicate the purpose of the local ERP;

- Identify relevant sources of information relating to ethics and the three Rs.

c)   **General rules**

- Identify the project licence(s) they will be working under and the holder(s);
- Identify their supervisor if applicable, and state that responsibility for supervision lies with the Project licence holder;
- Indicate whom to contact in the event of unexpected events;
- Indicate who their local HOLO (if applicable) is;
- Be able to identify Named Persons and appreciate that they are sources of information and advice;
- Be aware of the importance of excluding non-authorised persons from areas where protected animals are held and used, and action to be taken if such entry occurs.

Health, safety and security
- Indicate that health and safety at work is controlled by legislation;
- Indicate different hazards associated with the use of laboratory animals (allergy, injury, infection);
- Describe signs commonly associated with allergy to laboratory animals, and steps to be taken to avoid this developing and required in the event of such signs developing;
- Define what is meant by zoonoses;
- Indicate procedures to be followed in the event of accidents;
- Indicate steps to be taken to ensure personal safety and security and the safety of colleagues;
- Explain action to be taken if accosted by animal rights protesters, or if followed when leaving the workplace.

Supply and disposal of animals
- Describe in general terms local procedures for the acquisition and disposal of animals, and disposal of waste;
- Indicate that acclimatisation and habituation are important and that they may affect the outcome of experiments;
- Indicate action to be taken in the event of unexpected adverse outcomes;
- Indicate that working in animal facilities requires compliance with relevant SOPs/GLP if appropriate.

Local issues

- Indicate relevant contact person(s) (e.g. Unit manager);
- Identify the project licence(s) they will be working under and the holder(s);
- Identify their supervisor if applicable, and state that responsibility for supervision lies with the Project licence holder;
- Indicate whom to contact in the event of unexpected events;
- Indicate who their local HOLO (if applicable) is;
- Be able to identify Named Persons and appreciate that they are sources of information and advice;
- Be aware of the importance of excluding non-authorised persons from areas where protected animals are held and used, and action to be taken if such entry occurs.

Different ways of learning

Education is the acquisition of knowledge, skills and attitudes, or the ability to formulate and test hypotheses. There are many theories surrounding the process of learning, but some common themes emerge. Many writers believe that knowledge cannot be transferred from expert to ignorant; rather it has to be constructed by the learner. This means that learning is a process of problem solving and self searching: Others suggest that some learning can take place by uncritically receiving information given by someone else, but other learning takes place only by testing and experimenting on the basis of experience (Dudley, 1993)[6].

Experiential learning and the learning cycle.

Experience is increasingly believed to form the basis of all learning. It has been suggested that learning is accomplished by critical reflection on experience (Freire, 1972)[7]. Learning psychology indicates that in the adult, learning is mainly problem-centred (Knowles, 1984[8]; Andragogy – see later in this section). Personal experience is increasingly believed to form the basis of all learning, and action is a fundamental aspect of such experience. Experiential learning based on the Kolb Learning Cycle requires learning to be achieved through cycles of concrete experience, reflective observation, abstract conceptualisation and active experimentation. This then becomes the concrete experience for further reflection thus completing the cycle (Kolb, 1984[9]). Action then can be argued to be an essential part of the learning process, not an add-on at the end. Without action, learning may not taken place effectively. As a continuation of this cycle, Kolb points out that critical reflection may lead to the drawing of conclusions, and the formation of hypotheses, which can then be tested in new situations. This of course forms the basis for research. His highly influential book entitled *'Experiential Learning: Experience as the source of learning and development'* was first published in 1984 and since then his ideas have had a dramatic impact on the design and development of lifelong learning models. David Kolb's work can be traced back to that famous dictum of Confucius:

> *"Tell me, and I will forget. Show me, and I may remember. Involve me,*
> *and I will understand."*

An 'experiential learning cycle' is a means of representing sequences in experiential learning. It is often assumed that the stages of a 'learning cycle' are managed by a facilitator, but they can also be self-managed or even 'unmanaged' in the sense that learning from experience is a normal everyday process for most people. From a trainer's perspective, an experiential learning cycle is a 2, 3, 4 or 5 stage learning sequence which encourages continuity from one experience to another. It is sometimes referred to as a 'training cycle', which can be misleading, especially if the theory underpinning it is about learners and learning. The learning cycle could, for example, involve online activities or set tasks before a course starts. In this way candidates come prepared with questions based on the difficulty or understanding of the task set.

Learning styles

Individuals develop one or more preferred learning styles. Individuals can learn through more than one of these; however, people tend to learn better using one or more styles than through others. In any group of learners, there will be a range of preferred learning styles,

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[6] Dudley, E. (1993). The critical villager. London: Routledge.
[7] Friere, P. (1972). Pedagogy of the oppressed. Harmondsworth: Penguin.
[8] Knowles M and associates (1984) Andragogy in Action, Gulf Publishing Co, Houston.
[9] Kolb, D. A. (1984). Experiential learning: experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall.

thus it is necessary for a wide range of teaching and learning activities to be used in order to provide learning opportunities suitable for all participants (Rogers, 1996[10]).

Active learners prefer to learn by doing immediately, without theoretical background, and prefer to find things out for themselves. They want to try as many things as possible.

Reflective learners prefer to wait and see; they watch and listen to others first before trying for themselves. They collect different opinions before making up their minds.

Theorising learners like to understand basic principles thoroughly, thinking things through step by step and dealing with general principles rather than specific cases.

Experimental or pragmatic learners like to experiment to apply new insights. They do not believe what they are told until they have seen it for themselves. They like solving problems and become impatient with too much talk.

Thus different types of learning activity will suit different types of learner. Traditional methods of teaching by information transfer followed by practical application of the information would seem to fit with these theories, providing different types of learning opportunity for different types of learner.

Andragogy - Adult Learning, assumptions, practicalities and the role of the tutor

M. Knowles' theory of andragogy is an attempt to develop a theory specifically for adult learning. Knowles emphasizes that adults are self-directed learners, and expect to take responsibility for decisions. Adult learning programs must accommodate this fundamental aspect. However, andragogy makes the following assumptions about the design of learning:

  (1) Adults need to know why they need to learn something; they are relevancy-oriented;
  (2) Adults need to learn experientially;
  (3) Adults approach learning as problem-solving;
  (4) Adults learn best when the topic is of immediate value.

In practical terms, andragogy means that instruction for adults needs to focus more on the process and less on the content being taught. Strategies such as the following are most useful in the context of module courses:

  o the use of case studies;
  o role playing;
  o simulations;
  o self-evaluation.

In these circumstances the tutor has two main roles, as a facilitator and a knowledgeable resource not only lecturer or an assessor.

Moving from Pedagogy to Andragogy

There is little doubt that the most dominant form of instruction is pedagogy, or what some people refer to as didactic, traditional, or teacher-directed approaches. In the pedagogical model, the teacher has full responsibility for making decisions about what will be learned, how it will be learned, when it will be learned, and if the material has been learned. Pedagogy, or teacher-directed instruction as it is commonly known, places the participant in a submissive role requiring obedience to the teacher's instructions. It is based on the assumption that learners need to know only what the teacher teaches them. The result is a teaching and learning situation that actively promotes dependency on the instructor

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[10] Rogers, A. (1996). Teaching adults. Buckingham: Open University Press

(Knowles, 1984[11]). Up until very recently, this model has been applied equally to the teaching of children and adults, and in a sense, is a contradiction in terms. The reason is that as adults mature, they become increasingly independent and responsible for their own actions. They are often motivated to learn by a sincere desire to solve immediate problems in their lives. Additionally, they have an increasing need to be self-directing. In many ways the pedagogical model does not account for such developmental changes on the part of adults, and thus produces tension, resentment, and resistance in individuals (Knowles, 1984[12]). The growth and development of andragogy as an alternative model of instruction has helped to remedy this situation and improve the teaching of adults.

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[11] Knowles M and associates (1984) Andragogy in Action, Gulf Publishing Co, Houston
[12] ditto

Appendix 2a

Flexible and distributed learning (e.g. e-learning):

Some sections of the modular training programmes may be delivered by e-learning. In particular the Legislation section of Module 1 lends itself to an e-learning environment whereas the others generally require participants to take an active role in the learning experience. Careful design of an e-learning package can ensure it is suitably interactive and provides an appropriate range of learning opportunities.

Systems should be thoroughly tested and piloted prior to use, and should be free from viruses. The reliability of the delivery system used for web based or interactive learning should be tested, and suitable contingency plans developed in case of failure of the designated delivery system.

Any delivery system used for remote access learning must be tailored to the environment in which the participant is working, but must be at the lowest level of technology available to participants. The delivery system should be fit for purpose, and be fully available with a suitable life expectancy.

Delivery of course materials should be secure and reliable, and some method put in place for acknowledgement of receipt. Password protected access or access authentication mechanisms should be provided.

Study materials used should meet the expectations of the accrediting body with respect to the quality of teaching and learning support.

Appendix 3

Application of the modular system and personal licence applicants

Section 4(4A) of ASPA states that;

> "*The Secretary of State shall not grant a personal licence to a person unless he is satisfied that the person- (a) has appropriate education and training (including instruction in a relevant scientific discipline) for the purpose of applying the regulated procedures to be specified in the licence; and (b) is competent to apply those procedures in accordance with the conditions which are to be included in the licence and to handle and take care of laboratory animals.*"

Since 1 April 1994 applicants for personal licences have been required to have successfully completed an accredited training programme. This should have covered the relevant Modules as indicated in the Home Office Policy on the Education and Training of personnel under the Animals (Scientific Procedures) Act 1986 (Appendix F of the Home Office Guidance on the Operation of the Animals (Scientific Procedures) Act 1986). Very limited exemptions from these requirements may be considered by the Home Office. Applicants seeking exemption are advised to discuss with their local Inspector at an early stage.

This section provides guidance on the training and certification requirements for different situations. Note the modules referred to in this section are defined according to the existing Home Office policy.

1. General points

1.1 Modules may be completed individually to provide flexibility.

1.2 Completion of modules 1-3 would be required for a personal licence application covering simple, non-surgical techniques, e.g. Common methods of dosing and blood sampling, and procedures under brief general anaesthesia such as bleeding out or tail biopsy.

1.3 Successful completion of module 4 is necessary for all more invasive and surgical techniques and those including recovery anaesthesia, or prolonged terminal anaesthesia.

1.4 Module 1 is not species specific and though it may be done in the context of a species or species group it need not be repeated if a new technique or species are added subsequently.

1.5 Module 4 may be done in the context of a species or species group, but should be a general module in which the principles of surgery and comparative anaesthesia are taught. It need not be repeated if new species are requested after the module has been completed.

2. New licence applicants

2.1 New applicants for personal licences will be required to undertake the training modules appropriate to the skill level and the species in the application. This means that at least modules 1, 2 and 3 should be completed in all cases (except exemptions).

2.2 New applicants should generally complete training for each species (mammals) or group (other classes) that they wish to include on their licence. It may be possible if training has been completed for several species in a group to apply to add another species from that group to the personal licence without further training, but applications covering a wide range of species without an appropriate diversity of training are unlikely to be granted. Such cases should be discussed with the local Inspector. For example:

a.   an applicant providing evidence of training in rats, mice, guinea pigs and rabbits may be permitted to add gerbils to their personal licence without further training;

b.   an applicant having completed training in mice only should be expected to complete further training before being granted authority to use rats and rabbits.

3.   Existing licence applicants

3.1 A personal licensee seeking extension of authority from minor procedures to major surgical procedures (i.e. skill level of module 3 to skill level of module 4) will be expected to complete module 4.

3.2 A personal licensee seeking significant amendment to the species authorised on the licence (e.g. currently licensed and with certified training for rodents only but also seeking licence authority for dogs or a farm animal species) will be expected to undergo additional training, assessment and certification relevant to the new species on the topics covered by modules 2 and 3 before application for such amendment.

3.3 There is limited scope for exemption from training where an existing licensee is applying for an additional but closely related species.

4.   Certification

4.1 Training certificates should identify the modules undertaken and the individual species (mammals) or order/family/other convenient grouping (for other classes) in which sufficient theoretical training has been provided and that have been handled in training, and certificates should not be issued for species that have not been specifically covered in the course.

4.2 It is accepted that for some species there may be no accredited training provision, for example; wild animals. In these circumstances, two approaches may be acceptable:

a.   Applicants may complete the general parts of an accredited course or a course for a similar species, and provide evidence of training with the species in question delivered by a third party prior to or after completion of the course. Accrediting bodies may issue certificates for the particular species under certain circumstances, only if the third party training has been accepted as part of the accredited course.

b.   In-house non-accredited training might be accepted by the Home Office if it was provided to existing PiLh who had undertaken module training in the principles of the new species requested, had Modules 2 and 3 in a related species and if the non-accredited training in the additional species was to be provided by appropriately qualified trainers. Here the certificate would have identified the species actually handled during the accredited course, and evidence of additional in-house training should be presented to the Home Office at the application stage. In undertaking some other arrangement in place of accredited training licensees should be aware that the absence of a certificate from an Accreditation Body may put them at a disadvantage at some later date.

4.3 For other species, it may be inappropriate for course participants to handle the animals during training, e.g. large primates, fish. In these circumstances, demonstrations of handling or videos may be used. It is necessary for participants to provide documentary evidence of experience of handling gained in their home institutions supervised by suitably qualified trainers prior to or after modular training in order for a certificate to be issued.

5.   Species Groupings

5.1 Small laboratory animals. Even closely related species such as rats, mice and gerbils are markedly different and it is not appropriate for one species to substitute for them all. For example, if someone submits a certificate covering mouse only, this would not be sufficient to cover gerbils, but if the certificate included mouse, rat, hamster, guinea pig

and rabbit it may be acceptable to include gerbils on the licence application.

5.2 Farm animals. Training in either sheep or goats would normally be sufficient to allow acceptance of the other. Training in other large animals (e.g. Pigs, cattle or horses) would not, although experience in cattle may be considered sufficient to cover other large ruminants.

5.3 Primates. OWM or NWM are not considered to be a substitute for the other in training

5.4 Birds. Birds should be split into poultry, large and small wild birds, or other appropriate division. Licences for work on embryonated eggs alone could be granted following completion of modules 1 and 2, or a dedicated egg module. Training in handling of poultry is not necessary for those wishing to work only with eggs.

5.5 Reptiles, amphibia, fish. These species may be divided into convenient groups, e.g. amphibia may be divided into anurans and caudata. Fish may be treated as one group, tropical / temperate / marine / freshwater as appropriate.

5.6 Wild and exotic species: See section 4.2.

6.   Applying for licence authorities after completing accredited training

It is assumed that applicants will apply for licence authorities within a short period after completing accredited training. Where an application is made more than five years after training was completed the Home Office will require that training is repeated.

7.   Summary

Training courses for new licensees are readily available and exemption from training in common laboratory species for new applicants is not often appropriate.

It is expected that applicants will have handled all species listed on the certificate, however in the case of exotic or wild species, primates or fish this may not have taken place during the accredited training course.

Training in less common species may not be readily available, in which case certificates issued following training in a related species may suffice, if supplementary evidence of additional training and experience gained prior to or after accredited training for the species or group in question is provided.

Limited exemptions from training requirements may be considered by the Home Office, e.g. Exemption from training for some species may be considered following training in several related members of a subgroup. Licence applicants should discuss requests for exemption with the Inspector. The certificate should still identify only those species/groups for which sufficient theoretical training has been completed, where handling has been completed, either as part of the course or supplementary to it.

An explanation of Learning Outcomes and Their Assessment (LOTA)

What are learning outcomes?
Typically a learning outcome is a statement of what a participant is expected to know, understand and be able to do at the end of a course.

This definition suggests that:

- o Learning is not just about knowing subject-specific details but also about the development of cognitive and key skills (for example: being questioning and analytical; being able to communicate effectively and appropriately) necessary to use the subject knowledge.
- o Learning is about developing and demonstrating skills and knowledge. That is, assessment activities should be designed to give participants an opportunity to show how they are working towards the learning outcomes, and an opportunity for feedback to help them improve.
- o Outcomes refer to the end of a course. Working towards the outcomes during a module or a course is a developmental process in which assessment is part of, and guides, learning.

What are learning outcomes for?
An outcomes-based approach shifts the emphasis from the tutor to the participant, from teaching to learning. The goal is to enhance learning by helping participants know what they should expect from their course, and what they are expected to be able to do if they are to be successful. The approach aims to:

- o Make the curriculum, and the demands and achievements of study clear to participants, teachers and others (such as employers or professional bodies).
- o Help participants develop as independent and lifelong learners, able to adapt and learn for themselves in a rapidly changing social and economic environment. Learning outcomes also:
- o Enable course teams to clearly link the learning, teaching and assessment materials at the earliest stages of course production.
- o Provide a framework for quality assurance.

Learning outcomes and assessment
An assessment strategy should be concerned with giving participants a range of opportunities to demonstrate their development of the intended learning outcomes, such as:

- o Explicitly linking learning outcomes to assessment.
- o Providing opportunities for continuous assessment as well as end-of-course assessment.
- o Providing opportunities for formative as well as summative assessment.
- o Using assessment criteria that are shared with, and are understood by, the participants.
- o Giving opportunities for participants to gain experience of a range of appropriate assessment methods. For example, traditional examinations may not be an appropriate way to assess skills such as information management, team working, or oral communication.
- o Giving associate lecturers guidance on how their feedback can support participants' achievement of relevant learning outcomes and also feed forward to future

assignments to guide participants' further development, particularly of more generic skills outcomes.

Development of the learning outcomes and the assessment strategy of a course or module should take place alongside content planning. Outcomes and assessment should not be 'bolted on' to content at the end. Being explicit about the learning outcomes, and using an assessment strategy that helps participants work towards them, helps to build their confidence and support participants in becoming effective learners.

Learning outcomes should be referenced to study at a particular level so that appropriate and realistic judgments about performance and development can be made. Table 3 at the end of this appendix presents an example.

Staff involved in course production
In the course production process the learning outcomes should be used to form the basis of teaching and assessment materials and be explicitly linked to assessment. Learning outcomes must be supported by a variety of assessment methods and specifications need to be regularly reviewed and updated, particularly when changes have been made to modular content.

Tutors involved in course delivery
Tutors need to be aware of and reinforce the learning outcomes of a course, particularly those that are assessed. Learning outcomes place an increased emphasis on supporting participants' skills development, as well as on acquisition and use of subject-specific content. Tutor's concerns about course content and learning outcomes should be fed back to course developers and guidance needs to be provided by Accredited Bodies on appropriate methods of feedback from participants and tutors.

Participants attending course modules
Learning outcomes provide a focus for appropriate formative, as well as summative assessment activities. The proportion of summative versus formative assessment and non-examined course content will depend on the particular module. Learning outcomes provide a framework against which specific feedback can be given on a participant's progress towards the outcomes. Participants should be better able to assess their own progress, and identify where they need help particularly if several courses are taken in quick succession. Participants need to be provided with a language that helps them to recognise and articulate their own achievements.

For external assessors and the audit process
Learning outcomes form part of the quality assurance processes of any HEI and should support claims to an external assessor about what a participant is capable of doing by the end of a course. Learning outcomes should be examined by external assessors as part of the approval process for any new course.

Defining Learning Outcomes
Learning Outcomes can be divided into four categories: knowledge and understanding, cognitive skills, key skills and professional/practical skills. Knowledge and understanding relate to the content and subject matter of the course; cognitive or thinking skills are associated with analysis and synthesis of the course content; key skills are more general and concern the participant's ability to communicate, use relevant ICT and information literacy skills, or work with others. Professional/practical skills are particular skills that relate to the subject area.

The following verbs are useful when writing learning outcomes for each of the four categories defined above.

<u>Knowledge and Understanding</u>
Describe, identify, label, show, demonstrate, organise, know, understand, be aware of, recognise, define, classify, paraphrase, give examples of, summarise, discuss, explain and clarify.

<u>Cognitive skills</u>
Use, select, apply, present, compare, construct, illustrate, engage with, consider, assess, evaluate, synthesise, analyse, interpret, distinguish between, differentiate, contrast, question, challenge, critique, argue, account for, justify, judge, appraise, review and defend.

<u>Key skills and professional/practical skills</u>
Find, identify, develop, recognise, use, manage, engage with, communicate, present, record, evaluate, compare, assess, select, choose, plan and monitor.

The table at the end of this section shows how such descriptors could be used to determine/validate a participant's knowledge following learning.

The level of learning outcomes
The learning outcomes for a course need to be written at an appropriate level. Level 1 learning outcomes for example should focus on developing understanding and skills, level 2 on using and applying knowledge and skills and level 3 on critical understanding and the application of skills. The minimum qualifications required for holding a personal licence are 5 GCSEs at A-C and proficiency in the use of English. This minimum level places restrictions on the level of learning outcomes and their assessment. Most candidates attending module 1-4 training are at or near graduate level, and most of those attending module 5 training courses are at the post-graduate/post-doctoral level. Not all candidates however are at this level. Devising learning outcomes of an appropriate depth for the subject matter that can still be learned by a candidate with the minimum qualifications is a difficult task. The balance here isn't so much between the requirements of the different participants, but between the minimum 'knowledge' required and the academic ability of candidates with minimum qualifications.

Table 3. An example of participant's levels framework

Indicator	Level 1	Level 2	Level 3
Knowledge and understanding *Knowing about and understanding your subject.*	Show that you know and understand principles, concepts and terms central to your subject.	Demonstrate knowledge and critical understanding of the principles, concepts and techniques used in your subject.	Demonstrate systematic knowledge and critical understanding of your subject, some of it in specialist areas, and informed by current thinking and developments.
Cognitive skills *Description, application, analysis and synthesis of knowledge.*	Use your knowledge and understanding to describe, analyse and interpret defined aspects of your subjects.	Apply your knowledge and understanding accurately to a range of issues, questions and problems relevant to your subject. Apply established techniques to critically evaluate and interpret your subject in a range of contexts.	Select and use accurately established techniques of analysis and enquiry outside the context in which they were first studied, and be aware of their limitations. Synthesise, critically evaluate and challenge information, arguments and assumptions from different sources, including publications informed by current issues or research developments as appropriate. Recognise the potential uncertainty, ambiguity and limits of knowledge in your subject.
Key Skills *Addressing issues and problems Awareness of context and environment*	Know about and begin to address issues and problems central to your subject.	Compare critically and use different approaches to issues and problems within your subject.	Identify and ask questions appropriately to explore relevant issues or problems within your subject.
Communication *Communication clearly effectively and appropriately with others (including interpersonal skills, collaborative and group working)*	Develop your skills in communicating information accurately and appropriately to your subject, purpose and audience.	Communicate information, arguments and ideas effectively, using the styles and language appropriate to your subject, purpose and audience.	Communicate complex information, arguments and ideas effectively and appropriately to your subject, purpose and audience.
Information Literacy *Finding, critically evaluating and using information*	Develop your skill in finding, selecting and using information or data in defined contexts.	Find, critically evaluate and use information or data accurately in a range of contexts.	Find, critically evaluate and use information or data accurately in complex of contexts.
ICT and numerical skills *Using appropriate ICT and numerical skills*	Develop your use of ICT tools and your numerical skills as appropriate to support your studies.	Use ICT tools and numerical skills, as appropriate to help you learn effectively.	Select and use ICT tools to improve your learning and extend your numerical skills, as appropriate.
Learning how to learn *Managing and improving your own learning*	Develop your understanding and use of the resources available to help you learn, and begin to develop as an independent learner.	Plan, monitor and review your progress as an independent learner.	As an independent learner, plan, monitor and evaluate your own learning and seek ways to improve your performance.
Practical and professional skills *Developing practical skills and professional awareness*	Develop as appropriate, practical and professional skills and awareness of relevant ethical issues.	Engage as appropriate, with practical and professional skills and demonstrate an awareness of relevant ethical issues.	Engage as appropriate, with practical and professional skills and relevant ethical issues.
Personal and career development *Using personal and career planning and development resources*	Plan your study pathway to link your learning with your personal and/or your career goals.	Recognise and record your skills and knowledge to support your personal and/or career goals.	Recognise, record and communicate your skills and knowledge to achieve your personal and/or career goals.

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Appendix 5

The use of multiple choice questions (MCQs)

Current use of the MCQ
The investigation of imprecise terms used in some MB BS finals MCQ examinations, in Part 1 Membership Examination of the Royal College of Physicians and Royal College of Surgeons revealed that imprecise terms occur commonly, yet there is a wide range of opinion among the examiners themselves about their meanings. A second type of construction error – disproportionately large numbers of `true' branches – was also recorded. Exemplary practices do exist in MCQ quality assurance, but in the UK they are very much the exception rather than the rule. It is an extremely frustrating experience for someone with '*expert knowledge*' in a field being assessed, to find inaccuracies or misleading questions in MCQs [*personal communication with members and consultants on the APC ETSC and HOIs*].

Multiple-choice questions (MCQs) allow a wider sampling of knowledge compared with essay questions but can be criticised for being too low level, placing too much emphasis on factual recall, and giving participants insufficient opportunities to apply their knowledge. Multiple-choice questions (MCQs) are used extensively in both undergraduate and postgraduate medical education in the UK. There are two types in general use – true/false and one-best-(single-best) answer. Both types comprise a lead-in statement called the question stem and a number of branches which follow on from it. In true/false items, candidates are required to indicate whether each individual branch is true or false, whereas in the one-best-answer type they are asked to select only the single most appropriate option.

All MCQ formats are prone to construction errors. In particular, the simple true/false type appears to be highly prone to construction errors. For example, imprecise terminology and unequal numbers of `true' and `false' items are common. There are also problems concerning validity and reliability, especially where negative marking is used (i.e. when marks are deducted for incorrect answers). These drawbacks, along with the development of superior assessment methods, led institutions in the US to stop using all true/false formats in their examinations several years ago (Case & Swanson 1996[13]). In the UK the Royal College of Surgeons no longer uses negative marking and has adopted a 'single best answer' approach to MCQs.

Experts on item-writing would agree on certain principles concerning the construction, marking and development of MCQs. Many would also agree that it can prove extremely difficult to convince examiners that they are of any importance in education. Where inaccuracies exist in MCQs candidates can justifiably complain that the assessment is not fit for purpose. Thus the validity of the outcome can be challenged and exposing the organisation to litigation. Whereas one-best-answer MCQs use a relative scale which allows candidates to judge the correctness of each of the options offered and indicate which they feel is the best response, true/false questions use an absolute scale (i.e. true or false) and so every branch must be unequivocally true or false in its own right. It is particularly difficult to write plausible `false' items, which is why there tend to be more `true' items than `false' ones in these MCQs. However, many developers would agree that there should be a similar number of `true' and `false' items, otherwise some candidates may be disadvantaged, depending on how they respond to items about which they are unsure (Grosse & Wright

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[13] Case S, Swanson D. Extended-matching items: a practical alternative to free-response questions. *Teach Learn Med* 1993;**5** (**2**):107–15

1985[14]). Obviously, this must also impair the reliability of the exam. Guessing is a problem in all MCQ test formats. Most high-stakes MCQ tests now use the single best answer format with no 'don't know' option and a number-right scoring.

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[14] Grosse M E & Wright B D (1985) Validity and reliability of true–false tests. *Educational and Psychological Measurement* **45 ,** 1 13

Appendix 6

Proposed information addressed in an Accrediting Body Annual Report

1. Introduction.
2. Current membership of the Accreditation Board.
3. Membership of the Accreditation Board over previous year – dates of membership
4. Number of Accreditation Board meetings.
5. Number of training providers.
6. Frequency of courses per species.
7. Number of application/renewals/reaccredidation undertaken. The criteria used to determine acceptability.
8. Number of accreditation visits made and geographical range.
9. Number of spot checks/ the criteria that initiate a spot check/the frequency of spot checks.
10. What modules/courses/ the timetable including species.
11. Overview of paperwork examined - both external and internal.
12. Handling – procedures where handling is not done as part of course.
13. Number of candidates taking/passing each module.
14. Assessment type e.g. can candidates use course material for reference.
15. Examples of feedback given following Accreditation visits.
16. Items noted of best practice during visits.
17. Any concerns noted from course organisers during visits.
18. Any courses not accredited/withdrawn.
19. Any notable variations between courses?
20. Meetings with course providers – Agenda and outcomes.
21. Interactions with other Accrediting Boards in the UK.
22. Accreditation Board collaborations with others including Government Departments and Policy Makers.
23. Electronic learning.
24. Suggestions for change in accreditation procedure/documentation in the coming year.
25. Any other relevant items worthy of discussion.

Membership of the APC ETSC and co-opted members

APC ETSC members
Graham Moore (*chair from January '06 – January '08*)
Michael Festing (*until Sept 2009*)
Bob Kemp
Maggy Jennings (*until March '06*)
Sarah Wolfensohn (*from June 2009*)
David Smith (*from June 2009*)
Peter Hunt (*from June 2009*)

Observer from the Home Office Inspectorate
Maggie Lloyd (*until September '08*)
Kathy Ryder

Co-opted members
Maggy Jennings (RSPCA)

Consultant
Duncan Banks (Open University)