11.4 Approaches to lighting educational premises

11.4.1 Classrooms and lecture halls

Classrooms can be used for formal or informal teaching. Lecture halls are solely for formal teaching. In formal teaching, the students are all looking towards the teacher and the whiteboard or screen. In informal teaching, the students may be working in groups with the teacher circulating amongst them or the whole class may be arranged around the teacher.

For classrooms used for formal teaching, a regular array of direct or direct/indirect fluorescent luminaires can be used, the long axis of the luminaires being arranged parallel to the windows. The use of direct/indirect luminaires is specifically recommended in some of the DCSF (formerly DfES) Building Bulletins. The whiteboard should be provided with its own lighting system designed to eliminate glare and veiling reflections. This can be done by mounting fluorescent luminaires on the ceiling, shielded from the students and located so that the light reaches all parts of the board at an angle of less than 30 degrees from the plane of the board. The teacher needs to be able to control the lighting. The windows should be fitted with blinds to facilitate the use of visual aids.

Lecture halls often have raked seating and very little daylight. A regular array of dimmable luminaires shielded from students and arranged parallel to the seating is appropriate (Figure 11.2). The lighting of the instructor, any demonstration bench and the whiteboard should be provided by a separate installation. Both installations should be dimmable and under the control of the instructor.

For classrooms dedicated to informal teaching, flexible lighting is desirable. This can take the form of a low level of ambient lighting from a regular array of fluorescent luminaires supplemented by dimmable spotlights mounted on track.

11.4.2 IT room

The IT room is characterised by the installation of many computer screens for use by students (LRC, 2001a). The lighting of this room faces the same problems as a modern office and therefore should be lit in the same way, particularly as regards the methods used to minimise high luminance reflections from computer screens. The only difference is the need for the students to see a projected image of the instructor's screen. This need implies that the lighting should be dimmable by the instructor.

11.4.3 Arts studio

Arts studios have three special lighting requirements; good colour rendering, an emphasis on lighting vertical as well as horizontal planes to ensure good modelling and some flexibility in control (LRC, 2001b). Ideally, the windows in an arts room should deliver large amounts of north sky daylight. The electric lighting should blend with north sky daylight and should have a CIE general colour rendering index greater than 90. Both good modelling and flexibility can be delivered by an installation consisting of a low level of ambient lighting from a regular array of fluorescent luminaires supplemented by aimable and dimmable spotlights mounted on track.

11.4.4 Science laboratories

Science laboratories require special lighting in that the atmosphere may be humid and corrosive. Luminaires should be sealed and proof against dirt and damp to IP44 (see Table 4.10). The electric lighting in a science laboratory should provide the required illuminance uniformly over the horizontal working plane. Supplementary task lighting may be needed.