

Group Sizes for Design and Technology in Secondary Schools

Design and technology in secondary schools has evolved against an established custom and practice of a maximum group size of 20. In modern design and technology teaching there is a clear tendency towards smaller scale work in a broader range of lighter materials. There remains however, the need to create a safe working environment for children and to take the management decisions most likely to promote high standards.

Heads of department must exercise responsibility appropriate to their position as part of the management structure in a school. They should provide senior managers with specialist advice and be mindful of whole school issues that may impinge upon their particular needs and circumstances. It would be too simplistic therefore to demand adherence to some arbitrary figure for the maximum number of pupils in a D&T lesson. A more intelligent approach is to consider the various arguments, assess the risk and then identify a strategy to deal with situations that may be deemed unsatisfactory.

The Curriculum Argument

Annual reports from HMI and Ofsted have noted the difficulties experienced by teachers when group sizes increase. They refer to the problem of providing sufficient resources, including the time a teacher can spend with each pupil and the limitations this places on practical work. It is self-evident that a large examination group cannot get the same support for individual major projects as a smaller group for example.

Schools will care too much about providing all children with their full curriculum entitlement to want to tolerate such an impediment to the development of high standards. The emphasis of Design and Technology work in schools is on designing and through work that is practical and increasingly individual. If the programme of work is planned to provide each pupil with an appropriately varied design and make experience, the level of teacher involvement with a class of 20 pupils is a demanding one even for an experienced and well-qualified specialist teacher.

The Health and Safety Argument

There may be no current statute that sets out the maximum class size for design and technology but the health and safety arguments are no less robust. All employers, including Headteachers and governing bodies, have a common law duty of care. Responsibility for determining the number of pupils in a D&T class rests with the Headteacher who must make a professional judgement and assess any risks. Teachers however, have a duty to inform their managers if they believe a situation to be unsafe and, provided that the teacher is deemed competent, the Headteacher is required to listen to the advice given before exercising judgement. Discussion should result in agreement on matters such as class size through the normal school policy formulating procedures. Agreeing to disagree is not a solution and would not stand up in law.

Once pupils are in the workshop, or other practical area, it is the responsibility of the teacher to ensure they are properly supervised. As far as is practicable, the teacher must have good sight lines to potentially hazardous equipment and should have good access to emergency switches. The exact number of pupils a teacher might reasonable expect to teach together in a workshop will depend on factors including:

- the size of the room,
- the nature of the equipment,
- the age and nature of the pupils,
- the range of work to be undertaken.

Where a room is below the recommended size the class size may have to be reduced to achieve a safe practical working environment. This might apply also where the activities being carried out are

very demanding of space, such as at KS4, or where the pupils are particularly 'unstable'.

The Accommodation Argument

Many existing D&T rooms will have been built to previous standards, which assumed group sizes of 20, and more modern standards continue to assume a similar figure. DfEE guidance usefully makes some distinction between the various aspects of design and technology. This could provide some flexibility for managers when organising teaching groups to maintain low numbers at least in the critical areas.

The DfEE publication *'Design and Technology Accommodation in Secondary Schools'* (Building Bulletin 81, 1996) points out the "scale of equipment and machinery is a major influence" on the size of spaces and illustrates the following:

- spaces of 80-85m² for groups of up to 21 pupils doing small scale practical activities such as textiles or graphics;
- spaces of 100-105m² for groups of up to 21 pupils involved in larger scale activities such as making with wood, metal and plastics or working with food.

Although not specifically linked to educational establishments, the *'Health and Safety Commission's (HSC) Workplace Health, Safety and Welfare Approved Code of Practice'* (1992) provides a useful alternative guide to judge if spaces are large enough for a given group size:

"The total volume of a room, when empty, divided by the number of people normally working in it should be at least 11 cubic metres. In making this calculation a room or part of a room which is more than 3.0m high should be counted as 3.0m high. The figures of 11 cubic metres per person is a minimum and would be insufficient if, for example, much of the room is taken up by furniture". (para. 7 reg. 10: Room dimensions and space p.14)

It is clear that in a D&T room much of the space is indeed taken up by furniture and, in many cases, potentially dangerous machinery. Schools where group sizes exceed 25, even if in large 90m² rooms that are empty of furniture and equipment, would clearly be in breach of this regulation if they were to be regarded as workplaces.

A Strategy

A starting point for D&T managers is first to calculate the sizes of the spaces available and check they are suitable for the range of activities intended with a full class of pupils. If, as a consequence, group sizes are judged too large and this cannot be changed, a teacher's only recourse will be to review the courses being offered in terms of range of work covered, the degree of prescription necessary and the type of equipment permitted.

This is not to advocate a prescriptive scheme of work as a first approach but rather as a last resort for those teachers who may find themselves in otherwise impossible circumstances. Some of the consequent compromises may prove difficult to defend in terms of national curriculum coverage and pupils' entitlement, but teachers cannot be advised to expose children to a situation which they genuinely believe is dangerous.

To maintain group sizes to an acceptable number, some departments have been able to prioritise those areas where group size is most critical by organising graphics alongside food or workshop based groups for example. Others have accepted maximum size groups at KS3 which releases staff to reduce the size of examination sets. Where the problem is lack of accommodation rather than staff, some schools are considering ICT sessions, running alongside D&T, and through which groups of pupils are rotated. This at first sight may appear to reduce the D&T entitlement but this need not be the case if the ICT work is an integral part of the D&T course.

References

- **Maximum number of pupils taught within Design and Technology workshops and studios**

See ; <https://www.designtechnology.org.uk/for-education/health-and-safety/maximum-number-of-pupils-taught-within-dt-workshops-and-studios/>

- **Building Bulletin 81 - Design and Technology Accommodation in Secondary Schools - A Design Guide**

See : <http://science.cleapss.org.uk/Resource/Building-Bulletin-81-Design-Technology.pdf>

- **GL171 - Using Model Risk Assessments in D&T - CLEAPSS**

See : <https://dt.cleapss.org.uk/Resource/GL171-Using-Model-Risk-Assessments-in-D-T.aspx>

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