Competence Based Learning: Fabrication and Welding

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With the arrival of competence based schemes came the realisation that the traditional Fabrication and welding workshop facilities at the college were inappropriate. They provided too many barriers being bound within rigid structures of staffing and technician support as well as the physical parameter of dividing walls.

In structure competence based schemes comprise a number of stipulated competences related to the systems, processes, equipment and material used within the occupation for which the applicable scheme was designed. In the department this meant the City & Guilds 201 Basic Engineering and 398 Vehicle Body Competences. On average 75-90 students per year. Both schemes revolve around separate cores with specialist options according to discipline. The learning approach required left traditional teaching redundant and the existing workshop layout and structure totally inappropriate.

The learning approach is based upon the practical project tasks containing the necessary elements to enable assessments of the students ability in 4 main areas of application: Communication, Planning, Doing, Checking. Such schemes are not intended to be about abstract theory but technological know how related to real life applications — NVQ will require an element of workplace assessment also.

The existing structure was too formal, walls were literal boundaries. Staff expertise was not easily utilised between groups containing several specialists.

In redesigning the workshop base a philosophy of student centredness was paramount. The open plan decision was intended to facilitate task based learning, technician support, appropriate work areas and associated classroom and laboratory facilities adjacent to workshop areas.

The open plan approach necessitated a wide range of materials, space to store course work, resources (including textbooks nearby), free and open access to hand tools in addition to a central store.

The original layout consisted of adjacent work areas, 5 in all:

Sheetmetal Workshop		Vehicle Body & Paint Shop	Heavy Fabrication	Welding		Multi-Skills

The new design created an open plan arrangement, a specialist paint shop and the multi-skills workshop relocated providing:

1. **Multi-Skills** (120m^2 approx.)
   - — Wood, metal, plastics.
   - — Science investigation area.
   - — Quality control facilities.
   - — Adjacent classroom facility.
   - — CNC press brake.
2. **Open Plan** — (300m^2 approx.)
   - — Central Store.
   - — Vehicle body repair (Vehicle access).
   - — Sheetmetal.
   - — Heavy fabrication.
   - — Welding.
   - — CNC Plasma Arc.
3. **Paint Shop** (96m^2 approx.)
   - — Vehicle access.
   - — Low bake oven spray booth.
   - — Paint mixing scheme.

The 5 separate stores areas went to one central base with 2 ready use stores remaining in Multi-skills and the paint shop.

One budget was created and all ordering centralised with the exception of the vehicle paint shop, an obvious specialism.

Significant Timetable changes were developed allowing a minimum of 3 hours continuous workshop practice in a 7 hour part time day. Course teams provided a more flexible approach than did individually timetabled staff.

Technician workload was redesignated with shared roles in staffing for specialist machinery and areas. Additionally a rota system for the central stores. Technician support is essential for safe and efficient working in the preparation and delivery of the project tasks.

The new layout provides capability in all aspects of fabrication and welding based schemes. The range of materials from plastic to wood to metal, a science investigation area, resourcing to produce pcb's and clean adjacent workrooms for students. The workroom is well resourced including open learning units (201 scheme), and a special needs material for students requiring learning support.

Current developments are based around a college Engineering Division brought about by the pending amalgamation of two departments. This will further enhance staff expertise and resourcing. Further developments need to include improved access to computers and IT generally. Flexibility is crucial. Staffing and technician support being vital. Significantly more responsibility befalls the student requiring greater application than the previously lecturer led approach.