

## **17. MECHANICAL AND MANUFACTURING ENGINEERING**

**Performance Level:** Good

### **Areas Inspected:**

- Full-time and part-time further education provision; and
- Training for Success and ApprenticeshipsNI provision.

### **CONTEXT**

17.1 The College has a good range of work-based learning and further education programmes at levels 1 to 5 across the specialist areas of fabrication and welding, mechanical and manufacturing engineering. Of the 117 learners registered on programmes at levels 1 to 3: 52 are on the Training for Success programme; 26 on the ApprenticeshipsNI programme; and 39 enrolled in further education. The provision is on the Armagh, Newry and Portadown campuses, with manufacturing engineering only on the Armagh and Portadown campuses. It is a concern that there is low recruitment to the full-time provision on the Portadown campus, which has an emphasis on advanced manufacturing; currently, there are 12 learners in year 1 and seven in year 2. Around three-quarters of the learners on the Training for Success strands have relevant work experience placements. Those without work placements have appropriate practical skills training in the College's automotive and engineering workshops.

### **The quality of the leadership and management is satisfactory.**

17.2 The broad range of work-based learning and further education programmes meets well the needs of the learners and the local economy. There are increasing links and partnerships being developed with local employers and schools to increase recruitment and to develop the provision of bespoke training. Currently, through the work of the research lecturers, a bespoke engineering apprenticeship for the local food manufacturing sector is being developed. The curriculum planning, timetabling and utilisation of the resources is not sufficiently coherent. For example, the advanced fabrication and welding equipment is located on a different campus to the fabrication and welding programmes, and the full-time further education learners have insufficient time in the engineering workshop. The quality of the facilities and resources are good overall. The equipment and resources, however, for conventional machining are just satisfactory. The staff are well-qualified and experienced, but would benefit from industry placements and study visits to benchmark best practice. The self-evaluation and quality improvement planning process is satisfactory. While the course teams identify accurately key areas for development, these are not sufficiently prioritised within the school's quality improvement plan. In addition, there is insufficient evaluation of the impact and outcomes of the essential skills. The arrangements for recording and tracking learner achievements against appropriate targets within the learners' personal training plans are underdeveloped. Consequently, the monitoring and reviewing of learners' progress and achievements is not underpinned sufficiently with timely and comprehensive data.

### **The quality of the provision for learning is good.**

17.3 In work-based learning, the learners are provided with suitable specialist pathways and units, which are mostly matched well to their workplace training. There is a very good balance between practical skills and theory training. In further education, the learners also have good opportunities to develop relevant engineering skills and knowledge, which include computer-aided design and manufacturing, engineering principles, pneumatics, and metrology. There are, however, insufficient opportunities for the full-time learners to design

and manufacture components and mechanical devices using a variety of engineering processes. The quality of the teaching, training and learning is good or better, with the majority (58%) of the sessions being very good. These sessions are well-planned with a good range of learning activities using industry standard equipment and practices. The use of ILT to support and enhance learning and assessment is overly variable; in work-based learning it is underdeveloped. The quality of the learners' training in the workplace is good; they are provided with very good opportunities to develop and apply their occupational skills. More needs to be done, however, to ensure that their assessment portfolios are updated and reviewed regularly. Careers advice and guidance provision is underdeveloped; there is only limited use of guest speakers, industry visits and career planning to ensure that the learners are fully aware of their career options and progression pathways.

### **Achievements and standards are good.**

17.4 Most of the learners are highly motivated and maintain positive relationships with their lecturers. The standards of work achieved by most of the learners are good or very good. They are, for example, developing high levels of confidence in the fabrication and welding of engineering products using modern welding techniques, the operation of conventional lathes and milling machines, the programming of computer-controlled equipment, and the use of computer-aided design systems. While most of the practical work is completed to an appropriate industry standard, the standards of the surface finish and dimensional accuracy of manually machined components are not consistently of a high enough standard. The learners' numeracy and communication skills are generally good or very good; they are able to read and interpret correctly complex drawings and carry out a range of arithmetic functions. For work-based learning programmes, a majority of the learners are retained and most of those who are retained achieve. For further education programmes, the retention rate is good (71%) and the achievement rate is good at 85%.

### **Table of Achievements**

#### **Further Education**

Course Type	Completion Year 2010/11			Completion Year 2011/12			Completion Year 2012/13			Three Year Average		
	Ret (%)	Ach (%)	Succ (%)	Ret (%)	Ach (%)	Succ (%)	Ret (%)	Ach (%)	Succ (%)	Ret (%)	Ach (%)	Succ (%)
Full-time Level 3	56	74	42	76	82	62	83	96	80	69	84	58
Part-time Level 3	75	100	75	82	86	71	60	100	60	77	90	69
Overall	58	77	44	78	83	65	80	96	77	71	85	60

## Work-Based Learning

Programme/Strand	Numbers registered who completed 4 weeks training	Retention rate %	Achievement rate %	Progression rate for those who achieved full award %
Mechanical Engineering				
Skills for Work	62	76	83	84
Programme-led Apprenticeships	58	53	71	41
ApprenticeshipsNI level 2	34	79	93	100
ApprenticeshipsNI level 3	25	80	100	100
Overall	179	70	84	81