An Roinn Oideachais agus Scileanna

Department of Education and Skills

Subject Inspection of Metalwork and Engineering

REPORT

Coláiste Cois Siúire
Mooncoin, County Kilkenny
Roll number: 70620C

Date of inspection: 9 February 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN METALWORK AND ENGINEERING

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Coláiste Cois Siúire. It presents the findings of an evaluation of the quality of teaching and learning in Metalwork and Engineering and makes recommendations for the further development of the teaching of these subjects in the school. The evaluation was conducted over one day, during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and the teacher, examined students’ work, and had discussions with the teacher. The inspector reviewed school planning documentation and the teacher’s written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and the subject teacher. The board of management of the school was given an opportunity to comment on the findings and recommendations of the report; the board chose to accept the report without response.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Coláiste Cois Siúire offers Metalwork and Engineering as optional subjects in the school’s junior and senior cycle programmes respectively. Junior cycle class groups receive four class periods per week, as is standard practice. At senior cycle, the fifth-year and sixth-year engineering groups are combined into one class and timetabled for six periods per week. These allocations are divided into double periods providing sufficient time for students to develop their practical skills and their knowledge and understanding of key theoretical principles. While this combined situation is not ideal, it is recognised that every effort has been made to ensure the viability of the subject at senior cycle. However the practice of combining fifth-year and sixth-year groups at senior cycle should be discontinued if the opportunity arises in the future.

The metalwork and engineering room is extremely well resourced and is maintained to a very high standard. Space is maximised in the room and machines are well dispersed providing students with an environment conducive to technology education. Materials and tools are stored appropriately and care has been taken to promote the safe use of machinery and equipment through the display of a wide variety of safety signs and posters. The room is also well equipped with information and communication technology (ICT) resources, allowing ICT to be integrated easily into lessons. The facilities at the subject department’s disposal are an example of best practice and the efforts made to create this environment are commended.

All incoming first-year students are given the opportunity to sample Metalwork for the first eight weeks of term. This system helps to provide students with the necessary experiences of the various optional subjects, thereby equipping them with the required knowledge to make more informed optional subject choices. Uptake of the subjects in the school is very good with most students enrolled choosing Metalwork and Engineering. Students entering senior cycle are
provided with the relevant information through interventions from the guidance counsellor, the subject department and through formal seminars outlining the various options available to them.

**PLANNING AND PREPARATION**

A metalwork and engineering subject plan has been developed. This plan provides a good starting point for the further development of subject planning. Initially, this plan should be transferred to electronic format in order to aid update and review. Once this task has been completed the subject department should then initiate a full review of the plan. Key areas for development include planning for students with additional educational needs and cross-curricular planning. To complement the existing strategies in place to support students with special educational needs, the subject department should identify subject-specific initiatives that would help students to develop their literacy and numeracy skills. Additional cross-curricular plans should also be identified with particular attention to subjects within the vocational subject groupings of the Leaving Certificate Vocational Programme (LCVP).

As part of its subject plan, the subject department has developed a curricular plan for each year group. This plan identifies subject content and the expected timeframes for their delivery. A number of good practices should be further developed within these plans, such as the identification of key skills for specific year groups. To achieve this, the subject department should focus specifically on students’ learning as opposed to lesson content.

The planned delivery of theoretical subject matter at junior cycle occurs mainly in third year. It is recommended that this practice be reviewed with a view to introducing students formally to theoretical content at a much earlier stage. The practice of introducing theoretical content in a structured manner into predominantly practical lessons should be extended to all lessons where appropriate. To achieve this, students could be given written or research tasks to supplement their learning and this integrated approach would help to underpin students’ knowledge and understanding of the various strands of the syllabus.

Planning for senior cycle Engineering is well developed. The fifth-year and sixth-year groups are taught together and follow a modular programme where practical, project and theoretical work is delivered in a cyclical manner, culminating in examination preparation. Practical and project work is appropriately differentiated among the groups and it was reported that fifth-year students benefit considerably from observing the sixth-year students’ completion of the design process.

The level of planning for lessons was very good. Demonstrations were well organised and tools, equipment and materials were prepared in advance. Machines were prepared for students prior to lessons, ensuring that the correct drill bits and vices were accessible. This level of preparation maximised the learning time available to students in each lesson.

**TEACHING AND LEARNING**

The observed teaching and learning in metalwork and engineering lessons was very good. All junior cycle lessons followed a similar structure and were characterised by a short introduction followed by teacher demonstrations and student activities that were supported by teacher guidance and advice. This cycle was repeated as required. At senior cycle, key areas of focus should be identified at the beginning of practical lessons. In doing so, students could be reminded
of important aspects to concentrate on such as the accuracy, finish and function of their project work. Exemplar pieces could also be distributed among students, thereby allowing them to self-assess and peer-assess practical work.

Group and individual demonstrations were the primary methods employed during lessons to facilitate students’ learning. These demonstrations were generally well organised and incorporated good levels of questioning that engaged students in the activity. In a minority of instances some students were unable to view the technique being demonstrated. To maximise the benefits of demonstrations, large groups should be divided or more suitable demonstration areas utilised.

A wide variety of learning experiences were managed very effectively during lessons. Students were encouraged to work independently and this experiential learning was facilitated by the teacher’s organisation and structuring of lessons. The development of students’ confidence in their own abilities and the fostering of their inherent aptitude for the subject are highly commended.

Classroom management was very good in all lessons observed. Teacher circulation helped to ensure that all students remained focused on the task at hand and that students’ techniques could be honed and improved in a sensitive and supportive manner. Students were purposeful throughout the evaluation and a good work ethic permeated all lessons.

Students’ class work was generally very good. Brief, neatly presented notes were supplemented with clearly labelled diagrams. These notes provide students with a useful study aid allowing them to revise important areas of the syllabus using their own work. The encouragement of students to maintain such well presented copybooks is commended.

Students demonstrated a very good level of learning. This was apparent from their written work and from their responses to questions on various aspects of the syllabus. Students’ practical skills were also good, with a particular proficiency shown in the areas of bench work, lathe work and thermal joining. Students’ uptake and attainment in certificate examinations is good and this reflects the subject department’s high expectations for students.

ASSESSMENT

As theoretical work is primarily completed during third, fifth and sixth year, homework predominantly tends to be prescribed during these years. It is recommended that homework exercises be prescribed throughout both programmes of study in order to ensure that students’ theoretical knowledge progresses simultaneously with their practical skill development.

Very good records of student progress are maintained. These records profile students’ attainment in practical and theoretical assessments, providing parents and students with good information pertaining to their progress.

Formative feedback is administered to students orally during and upon completion of project work. This invaluable advice helps students to improve their practical skills and to further develop their marking, shaping and processing techniques. Formative feedback should also be introduced to further support students’ written work. Through the more regular correction, monitoring and evaluation of students’ written work, areas of strength and development could be
identified for each student and appropriate strategies could be put in place to improve students’ understanding.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- There is a very good level of support for Metalwork and Engineering in Coláiste Cois Siúire, including the time allocated to the subjects and the facilities made available to the subject department.
- Students receive good support prior to choosing their optional subjects.
- Individual lesson planning is of a high standard.
- The quality of teaching and learning in Metalwork and Engineering is very good.
- Very good classroom management facilitated the creation of an environment where students could benefit from a wide variety of learning experiences.
- Student uptake of higher level and attainment at their chosen level is good.

As a means of building on these strengths and to address areas for development, the following key recommendations are made:

- The subject department should transfer the subject plan to electronic format and review its contents, prioritising the subject specific-supports for students with additional educational needs and further developing cross-curricular links with other subject areas.
- Curricular planning should be re-focused on students’ learning outcomes.
- Junior cycle students should be formally introduced to theoretical content at a much earlier stage.
- The use of formative feedback should be extended to students’ written work.

Post-evaluation meetings were held with the teacher of Metalwork and Engineering and with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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