Subject Inspection of Metalwork and Engineering

REPORT

Cabinteely Community School
Cabinteely, Dublin 18
Roll number: 91310E

Date of inspection: 19 March 2009
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 Cabinteely Community School, Dublin 18. 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 teachers, examined students’ work, and had discussions with the teachers. The inspector reviewed school planning documentation and the teachers’ written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and the subject teachers. The board of management was given an opportunity to comment in writing on the findings and recommendations of the report; a response was not received from the board.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Cabinteely Community School offers Metalwork and Engineering as part of its Junior Certificate, Transition Year and Leaving Certificate programmes. The time allocated to the subjects is good and teachers are given the opportunity to teach the subjects to the highest level on a rotational basis, as is good practice. Currently, Engineering does not form part of the school’s Leaving Certificate Applied (LCA) programme. During the next review of the school’s LCA programme consideration should be given to including Engineering as either an elective module or as a vocational specialism.

There are two specialist classrooms available for the teaching of the subjects in the school. These rooms share a common storage facility where tools and consumables can be readily accessed prior to and during lessons. While most of the items of equipment and machines in use in the rooms are in accordance with those outlined on the current equipment list as specified in the relevant Department of Education and Skills circulars, there are a number of machines that do not comply. School management should instigate a full risk assessment of these machines and reconsider their suitability in a classroom situation. In addition to this, the subject department should make the appropriate plans to spend the remainder of the health and safety funding made available to the school as per circular letter PBU 5/2005. Some areas that should be considered include: improving the subject department’s storage facilities, identifying and demarcating machine exclusion zones and the use of standard health and safety signage to complement the existing safety posters.
The systems in place to inform students and their parents of the optional subjects available to them at both junior and senior cycle are very good. These include: meetings with parents and students in March prior to entry to the school; subject sampling in first year and in TY; an open day; information evenings; and guidance support at key decision-making times for students. These measures help to ensure that students make fully informed optional subject choices based on their skills, interests and aptitudes. These interventions are commended.

School management has provided a number of continuing professional development (CPD) courses during school time and has facilitated the subject department’s attendance at external courses, including the Design and Communication Graphics courses provided by the Technology Subjects Support Service (TSSS). This commitment to ongoing CPD by school management and the subject department is commended.

PLANNING AND PREPARATION

The subject department has collaboratively developed a Metalwork and Engineering subject department plan. This has been progressed through the formal meetings facilitated by school management and through informal subject department meetings held regularly throughout the school year. The coordination of the subject department is rotated annually, but in practice the responsibilities attached to the role are shared between both teachers.

Within the subject department plan a number of areas for development have been identified in each section. This practice is both reflective and self-evaluative. To further progress this very good practice, action plans should be drawn up to bring about the desired and identified changes. These action plans should prioritise the most important changes required, identify the strategies needed to make these changes and the personnel, resources and timeframes necessary to achieve them.

Curricular plans have also been developed for all year groups detailing theoretical learning outcomes. A number of process sheets have also been developed to facilitate independent learning and to provide opportunities to implement differentiated teaching strategies. To maintain student interest and engagement in their learning and skill development, the process sheets and practical projects currently in use should be reviewed annually and some contemporary projects should be incorporated into the curricular plans whilst maintaining the key processes and skills that underpin the syllabus.

TY plans have also been developed for both the beginners and advanced TY groups. These plans are content based and should be reviewed in order to develop appropriate teaching and learning strategies more suitable to the TY programme.

The subject department plans for the integration of students with special educational needs (SEN) in a number of ways including designing appropriate worksheets, differentiating homework tasks and utilising special needs assistants (SNAs) to assist individual students in practical lessons. To further develop the existing support structures, a number of areas could also be examined. One such possibility is an induction programme for SNAs during which standard safety protocols in technology rooms are discussed and explained. The SEN and learning support team in the school should also be consulted in relation to how teachers, SNAs and specific students could work together in practical and theoretical lessons. This could lead to the development of a descriptor for each student specifying strategies and specific interventions suitable to their needs in a
practical classroom context.

Teachers planning and preparation for lessons was good in all cases and appropriate material blanks, resources and teaching aids were prepared in advance and incorporated into lessons effectively.

**TEACHING AND LEARNING**

All lessons observed were appropriate to the level and ability of the class groups. These lessons were introduced by sharing the learning outcomes with students and then by carrying out tasks such as checking attendance and the correction of homework. These procedures were employed in all lessons resulting in a consistent experience for all students.

The principal methodology employed in practical lessons consisted of a short theoretical introduction followed by student activity interspersed with good quality teacher demonstrations of various processes. Theoretical lessons were teacher led where new concepts were introduced, explored and developed with students contributing with questions and answers. Mnemonics and analogies were also used to help students to scaffold their learning and this was particularly suitable to junior cycle class groups. To further promote active learning among students, additional strategies should also be incorporated to promote student engagement and to lessen the reliance on teacher-led discussion in some lessons.

Project work was used to highlight key learning outcomes and to help students to apply their knowledge. An example of this occurred in a junior cycle lesson where the process of threading was being covered. Students were reminded of areas of their project work where this process was necessary. They were then asked to use their empirical knowledge to inform their theoretical learning. This form of integration of practical and theoretical learning is commended.

Questioning strategies were very good in all lessons observed. Global and individual questioning techniques were used and students were given suitable amounts of time to formulate their answers. Teachers called on a wide variety of students and probed and hinted depending on the students’ abilities.

An innovative technique was utilised when demonstrating the sequence for marking out a TY project. While all students were seated at their benches, the demonstration was carried out at the teacher’s desk and projected onto a screen using a web-cam. This cost effective and innovative method has a wide variety of useful applications and is highly commended. The use of similar information and communication technology (ICT) resources is to be encouraged as a variety of multimedia resources are available online that would help to enhance teachers’ demonstrations especially in theoretical aspects of the syllabuses.

Students were well behaved in all lessons. This was achieved through appropriate and significant lesson content and pacing. Teachers and students have developed a good working relationship and this has resulted in the creation of a positive learning environment. Where students required correction this was administered in a non-confrontational manner ensuring that any misdemeanour did not result in an escalation of misbehaviour or disobedience. This approach is commended.

When questioned, students were found to be very willing to contribute to discussions and their contributions demonstrated a good level of learning. Students’ copies were well maintained and their written work was appropriate to their age and abilities. Students demonstrated good practical
skills and were interested in their work and made good progress during lessons. A good work ethic was apparent in all lessons and students were particularly purposeful in their practical classes.

The subject department encourages all students to attempt the highest level appropriate to their abilities. Overall student attainment is appropriate to their level of ability and it was reported during the inspection that many students’ achievements in Metalwork and Engineering are among the best results obtained in the school.

**ASSESSMENT**

Students are formally assessed in end-of-term examinations. With the exception of first-year, end-of-term examinations consist of a combination of both practical and theoretical assessments, as is best practice. Sixth-year students are also given the opportunity to complete a full six-hour practical ‘mock’ examination giving them a good insight into their progress and skill levels.

A variety of assessment methods is utilised for all year groups. These methods allow students to gain the appropriate recognition for the practical skills that they have developed as well as the theoretical work that they have completed in the course of their studies.

It was reported that homework is assigned to students periodically. While the majority of the Metalwork and Engineering syllabuses are practical in nature, efforts should be made to assign homework to students on a more regular basis and this practice should be consistent throughout the subject department.

The subject department maintains very good records of student progress and achievement. These records help teachers to communicate relevant and up-to-date information to parents and students. Additional formative feedback was given to students throughout lessons. This feedback helped students to identify areas for development while also affirming their strengths.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- There are very good support structures in place for students at important subject decision-making times.
- The subject department has initiated a reflective and self-evaluative planning process.
- Common curricular plans for theoretical work have been developed for each year group.
- All lessons were well planned and delivered.
- Effective questioning strategies were utilised in all lessons.
- Student attainment levels are good at both higher and ordinary levels.
- Examination year students are exposed to the full range of assessment models during their ‘mock’ examinations.

As a means of building on these strengths and to address areas for development, the following key recommendations are made:
• School management should instigate a full risk assessment of the machines in the Metalwork and Engineering rooms and reconsider their suitability in a classroom situation.
• The TY plan should be reviewed in order to develop and implement additional teaching and learning strategies more suited to the aspirations of the programme.
• The subject department should further develop the existing support structures in place for students with special educational needs.
• Active learning methodologies should be implemented in lessons where appropriate in order to further engage students in their learning.

Post-evaluation meetings were held with the teachers 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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