

**An Roinn Oideachais agus Scileanna**

**Department of Education and Skills**

**Subject Inspection of Materials Technology (Wood) and  
Construction Studies  
REPORT**

**Ardcoil Rís  
Griffith Avenue, Dublin 9  
Roll number: 60420L**

**Date of inspection: 10 December 2010**



**A N R O I N N | D E P A R T M E N T O F  
O I D E A C H A I S | E D U C A T I O N  
A G U S S C I L E A N N A | A N D S K I L L S**

**REPORT**  
**ON**  
**THE QUALITY OF LEARNING AND TEACHING IN MATERIALS TECHNOLOGY**  
**(WOOD) AND CONSTRUCTION STUDIES**

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**SUBJECT INSPECTION REPORT**

This report has been written following a subject inspection in Ardscoil Rís. It presents the findings of an evaluation of the quality of teaching and learning in Materials Technology (Wood) and Construction Studies 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**

Ardscoil Rís is an all-boys school, catering for 518 students. Materials Technology Wood (MTW) is offered to first-year students as one of the optional subjects for the Junior Certificate examination and is banded against Spanish and Business Studies. In March of every year, parents of incoming first-year students are invited to attend an information night, where subject choices are presented and explained. Students make their optional subject choices shortly afterwards. MTW is a popular choice in the school and is usually oversubscribed. In subjects where demand exceeds the number of places available, a lottery system is used to determine allocation.

In senior cycle, the school offers the Leaving Certificate Vocational Programme (LCVP) in addition to the established Leaving Certificate (LC). Construction Studies (CS) is one of the optional subjects offered on both of these programmes. Third-year students choose their optional subjects for senior cycle from an open menu. Subject bands are then developed based on student choice, which is good practice. Parents are invited to attend an information evening where the programmes and subjects on offer are explained by the programme co-ordinators, guidance counsellor and senior management. These arrangements form a good model for the making of informed choices.

The optional Transition Year (TY) contained a CS module up to the end of the 2009 school year. This module was then replaced by a module in Design and Communication Graphics (DCG). It is recommended that senior management and the subject department consider the re-introduction of the CS module as well as maintaining the DCG module. The present loss of continuity in CS for TY students may result in a drop off in the uptake of the subject for the LC or LCVP. Furthermore, such a module would provide those who did not study the subject in junior cycle

with the opportunity to experience woodwork, the drawing of construction details and construction studies theory. This would place them in a more informed position regarding subject choice in senior cycle. When planning such a TY module, it is important that it be taught, learned and assessed in a significantly different way to CS in the Leaving Certificate programme. This could be achieved through self-directed learning, group work, project work and peer assessment.

The senior management of Ardscoil Rís encourages and facilitates teachers to attend continuing professional development (CPD) activities and to share good practice within subject departments. The MTW and CS teachers have attended training provided by the Technology Subject Support Services (t4). They have also attended courses provided by the National Centre for Technology in Education (NCTE) relating to advanced CAD and the use of *SolidWorks* as a teaching aid. This commitment from management and teachers to CPD is commended.

The subject department has a workshop available for the teaching of the practical elements of the subjects. This is well organised with good attention paid to the neat storage of tools and equipment. Large glazed areas running down one side and across the back of the classroom ensure that the room is bright but they also reduce the wall space available for the display of subject related materials. The workshop is dominated by a large circular saw, in the centre of the floor, which encroaches on the already limited work space. In order to maximise the space available, students' project work as well as some of the larger tools and equipment are retained in a nearby storeroom. Despite the cramped nature of this workroom, it is an interesting and stimulating learning environment for the students. Theoretical lessons are taught in the DCG room whenever possible. This is a more spacious room and it has good information and communications technology (ICT) resources. This is a very practical, commendable solution to the obvious difficulties which present themselves.

All year groups receive an appropriate time allocation for MTW and CS. Junior cycle students are provided with one double and two single class periods per week. Fifth-year students have a generous allocation of one double and four single class periods per week while sixth-year students receive one double and three single class periods per week. Good use is made of the extra time allocation in fifth year to progress the CS project work. The provision of double and single periods, which are evenly spread across the week, reflects good practice. Classes are of mixed ability and students sit certificate examinations at the level appropriate to their abilities.

## **PLANNING AND PREPARATION**

Senior management facilitates subject department planning meetings three times per year. It is recommended that minutes of these meetings be kept and retained in the subject planning folders and that copies of these minutes be provided to senior management. This is an effective way of ensuring that management is informed of ongoing developments in the subjects. A separate subject co-ordinator is in place for each subject with areas of responsibility determined by mutual agreement. There is clear evidence of strong collaboration and teamwork amongst the subject teachers.

The MTW planning documentation is well developed and contains schemes of work which are in line with syllabus requirements. In almost all cases, student learning outcomes have been identified for each topic and the work is closely time bound. This is good practice. As a further step towards the development of these schemes, it is recommended that, in relation to each topic, reference be made to the resources available for the teaching of that topic. The listing of resources could encourage the cataloguing of a shared bank of useful materials such as presentations,

*SolidWorks* models prepared by teachers, handouts, interesting websites and useful reference books. It would also help to identify the topics for which more resources need to be developed. Furthermore, within the schemes of work, details should be given on the teaching methodologies which have been found to be most successful in engaging and motivating students, as well as the most effective methods of assessment. The schemes of work observed within the CS plan would also benefit from a more detailed analysis in line with the recommendations made for the MTW scheme.

At present, the body of work for each year group in the junior cycle has been divided into two categories; practical work and theoretical work. The subject teachers have developed a separate scheme of work for each of these elements and these schemes run parallel to each other. It is recommended that, for each year group, these two schemes be combined into one. This would reduce the amount of paperwork and also facilitate a more integrated approach to the teaching of the subject.

Students' outcomes in the certificate examinations are analysed and compared to the national averages each year. The analysis shows a high uptake by students of the higher level paper. This analysis is also used to inform future planning for the subjects.

A very detailed safety document has been drawn up by the subject department which identifies all significant hazards associated with the woodworking machines and electric hand tools. The control measures put in place are also listed. The production of this high quality and well presented document is commended. When next reviewing this documentation, it is suggested that the subject department should reference *Guidelines on Managing Safety and Health in Post-Primary Schools* which has recently been distributed to all schools by the Health and Safety Authority (HSA). The subject teachers carry out a full risk assessment of the machinery every year and this is supplemented by a full safety audit by an external agency every two to three years.

The subject teachers are commended for developing and displaying machine-specific safe use rules for the lathe and pillar drill. This good practice should be extended to include other machinery which is used by students. Effective dust extraction is provided by a central unit placed outside the workshop to which the machines are ducted. Safe operational areas (SOAs) are demarcated around some machines. It is recommended that SOAs be immediately marked around all remaining machines. The rationale for such SOAs and the implications for movement and behaviour in the vicinity of machines should be explained to students. To further improve safety, it is also strongly recommended that the circular saw, which is exclusively for teacher use, not be activated when a class is in progress. This safety precaution is essential as the restricted space in the room necessitates the students' workbenches being very near the machine.

## **TEACHING AND LEARNING**

The quality of teaching and learning was very good in all lessons observed in the course of the inspection. Clear learning intentions were shared orally with the students at the start of lessons and in some instances the aims of the lesson were written on the chalkboard. The strategy of displaying the proposed learning outcomes is encouraged as they can then be revisited throughout the lesson and ticked off as each is achieved. This could assist both teacher and students to focus on the specific objectives of the lesson and enable the success of the lesson to be easily evaluated.

Lessons began with a brief recap on previously covered material. This enabled students to consolidate their learning prior to the introduction of any new material. Questioning techniques

were good with a combination of global and targeted questions used to aid the recall process, reinforce learning and advance student understanding. Students were very willing to engage and the teacher often repeated and clarified answers offered by students. Care was taken to ensure that all students had adequate time to formulate their answers and they were well affirmed for their efforts.

It was obvious that students had established routines regarding setting up for particular lessons and clearing up at the end. Students had been allocated specific duties and little time was wasted. This indicates consistency in lesson structure. These well organised routines promote responsibility for creating an ordered learning environment among students and are particularly relevant in Ardscoil Rís where the restricted space available to the subject department makes the maintenance of a well organised workspace absolutely essential.

The development of the students' design skills formed an important element of practical classes, across all year groups, and this is commended. Students maintain a project copy and for each project they undertake they must produce working drawings and record their design input. This is very good practice as it lays solid foundations for the production of the Junior Certificate design brief in third year. In a first-year lesson observed, the students were all completing a paddle boat project with some discussion around the set design. In a second-year lesson, the teacher had encouraged the students to adapt and modify the design of a bookshelf. Each student followed their own design with assistance offered by the teacher. This gradual introduction of the design process into project work is appropriate as students initially find this aspect of the syllabus very challenging.

During a CS theory lesson on the eaves detail of a house, information and communications technology (ICT) was used effectively to display photographs, drawing details and to present notes. The textbook was referenced to provide more information and in addition to this, students were further supported in their learning by the display of physical examples of the various building elements used. The use of such a variety of strategies is highly commended as it helps to ensure that the various learning styles of the students are supported.

The terminology associated with the subjects was used and emphasised during lessons and students were encouraged to use this terminology when interacting with the teacher. In one lesson observed, all new terminology was written on the chalkboard and students transcribed the new terms into their copybooks. This good practice enhances both teaching and learning and forms an effective support for the development of students' literacy levels.

Effective demonstration techniques were employed with conscious efforts made to integrate theoretical information into practical lessons. Such demonstrations are extremely important as they allow the teacher to model the proper execution of woodwork and construction procedures, processes and skills. Demonstrations were initially given to whole-class groups and teacher instructions were clear. Health and safety was a key theme running through all demonstrations. While students worked on tasks, the teacher circulated among them giving further attention to small groups and individuals as the need arose. This approach follows best practice and ensures that targeted support is being delivered.

Good student-teacher rapport was evident during the evaluation. All students participated well and showed enthusiasm for the work being undertaken. Students' efforts were acknowledged and affirmed and the atmosphere in the lessons observed was conducive to learning.

## **ASSESSMENT**

Students in certificate examinations classes have Christmas tests and sit “mock” examinations in spring. All other year groups have formal assessments at Christmas and at the end of the school year. Reports are sent home to parents following each assessment. The parents of students in each year group are invited to attend one parent-teacher meeting per year. Students’ progress is also communicated to parents by means of comments on homework and through the student journal. These arrangements form a good support structure for students and their parents.

In MTW and CS each project is assessed on completion. Portfolio work and design copies are also assessed and good records are kept on homework completion. The results from these assessments are aggregated with the Christmas and summer examinations. At each of these times the written theory paper accounts for about half the marks with the remainder coming from accumulated continuous assessment marks. This combining of several assessment methods is very good practice.

Homework is allocated, collected and corrected regularly. It was noted, particularly for senior-cycle students, that good levels of written comment from the teachers were provided. These comments were both affirming and developmental in nature, indicating the quality of work and how it might be improved. This is in keeping with assessment for learning (AfL) principles. It is suggested that this approach should be extended to encompass work from all year groups.

To further build on the good systems in place, it is suggested that the subject department develop the students’ ability to self-evaluate their work. To achieve this, greater use could be made of the marking schemes of the State Examinations Commission and the Chief Advising Examiners’ reports for the subjects. These resources are particularly useful for examination-year students as they contain model answers as well as clearly showing how marks are allocated. When taught how to use these resources, students can quickly identify and target areas for improvement.

## **SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- Time allocation to the subjects is good with lessons well distributed across the week.
- The subject teachers have attended all sessions of the programme of continuing professional development (CPD) made available through the Technology Subject Support Services (t4) as well as training provided by the National Centre for Technology in Education (NCTE).
- A stimulating learning environment has been created despite the cramped nature of the classroom.
- A very detailed safety document has been drawn up which identifies significant risks and hazards. Safety audits are carried out regularly.
- Collaboration and teamwork are evident amongst the subject teachers.
- A good standard of teaching and learning was observed in the course of the inspection.
- Teaching methodologies, which effectively supported students’ learning were used in lessons.
- Subject theory and terminology were well integrated into all lessons observed.
- There is careful monitoring of students’ work with results from continuous assessments aggregated with those from Christmas and summer examinations.

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

- The re-introduction of a CS module into Transition Year should be considered by senior management and the subject department.
- The MTW and CS schemes of work need to be developed to include the teaching resources available for each topic as well as methodologies to be used and proposed methods of assessment.
- The separate schemes of work for the theory and practical elements of the junior-cycle course should be combined into one scheme per year group.
- Safe operational areas should be immediately marked around all machines and teachers should not use the circular saw when a lesson is in progress.

A post-evaluation meeting was held with the teachers of Materials Technology (Wood) and Construction Studies and with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.