

An Roinn Oideachais agus Eolaíochta

Department of Education and Science

**Subject Inspection of Technical Graphics and Technical
Drawing
REPORT**

**St Fintan's CBS,
Doon,
County Limerick
Roll number: 64040V**

**Date of inspection: 16 April 2007
Date of issue of report: 8 November 2007**



A N ROINN OIDEACHAIS AGUS EOLAÍOCHTA | DEPARTMENT OF EDUCATION AND SCIENCE

REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN TECHNICAL GRAPHICS AND
TECHNICAL DRAWING

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in St Fintan's CBS, Doon. It presents the findings of an evaluation of the quality of teaching and learning in Technical Graphics and Technical Drawing and makes recommendations for the further development of the teaching of this subject 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 teachers, examined students' work, and had discussions with the teachers. The inspector reviewed school planning documentation and teachers' written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and subject teachers. 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

Technical Graphics and Technical Drawing are optional subjects for junior and senior cycle respectively. In choosing optional subjects students receive an excellent level of support through open days for prospective students, a taster programme of optional subjects in first year and Transition Year (TY) and through support and guidance from the school principal, guidance counsellor and school staff. Students entering second year and senior cycle are given an open choice of subjects and option bands based on students' choices are then developed. This is to be commended as best practice.

At present Technical Drawing does not form part of the taster programme for TY, however the subject teachers intend to incorporate the project elements of the new Technical Drawing syllabus into the programme for next year. This is to be commended as it will not only provide students with an experience of the subject but will also afford teachers the opportunity to implement this new element of the leaving certificate syllabus with a non-examination class.

There is an appropriate time allocation for Technical Graphics and Technical Drawing. There is a high uptake of Technical Graphics and Technical Drawing in all year groups.

There is one drawing room in the school. The room is very well equipped with sloping desks, t-squares and storage presses for drawing equipment, resources, teaching materials and student portfolios. The teachers of the subject are currently assessing how they might integrate the Department of Education and Science grant aided information and communication technologies (ICT) for the revised senior cycle Technical Drawing syllabus into the room. As part of this planning process it is necessary to ensure that the teachers of Architectural Technology in the school have access to these ICT resources.

The school management encourages and facilitates staff to attend continuous professional development (CPD) courses. The Technical Graphics and Drawing teachers are currently attending CPD courses being provided by the Technology Subjects Support Service (T4). In addition the in-school management organises CPD during staff days.

PLANNING AND PREPARATION

The Technical Graphics and Technical Drawing teachers work collaboratively as a subject department and regularly meet to plan their work. The subject teachers have developed a subject plan and minute and record key decisions taken at subject department meetings. There is a clear plan for the teaching of the subject in the school and the teachers have identified a number of long and short-term action plans and have assigned responsibility for their implementation.

The subject plan for junior and senior cycle includes long-term schemes of work which provide a clear description of the topic areas to be covered in each year of the course. Individual teachers have developed short-term plans that identify in different ways the knowledge, skills and learning outcomes that students should acquire in each year. In some instances teachers evaluated the progress of students by listing the drawings completed. It is recommended that teachers should develop a list of drawing titles and the associated geometric principles for each section of the course. It is further recommended that upon completion of each topic area teachers should record student progress and identify where appropriate those areas that students are having most difficulty understanding. This will assist in giving greater focus to revision lessons and assist in future class planning.

The Technical Graphics and Technical Drawing teachers are informed of students with special educational needs and those requiring learning support at the start of each year. This is to be commended as best practice as it allows teachers to plan and prepare for such students in each class.

Teachers have identified and developed a number of resources for the teaching of the subject and are continually planning for their introduction into lessons. These resources are stored in a central location and include models, handouts and posters.

TEACHING AND LEARNING

All lessons observed had a clear learning intention and this was shared with students at the start of each lesson. All lessons observed were clearly structured and in the majority of lessons the content and pace were appropriate to the class group, the subject matter and to the time available.

A range of appropriate and varied teaching methodologies was employed in the lessons observed. In all lessons teachers used the board to sketch drawing principles and constructions to assist students in visualising the subject matter. In some instances models were also used. When such teaching methodologies were used they assisted in helping students gain a greater understanding of the subject matter under study. In a number of lessons observed teachers tried to relate the topic under study to real world examples. This was particularly evident in the lesson on conic sections where the teacher encouraged students to describe natural occurrences of conic sections. In all lessons observed there was very good use of the chalkboard to demonstrate and model best

practice. In some instances the teachers had completed the drawing sheet themselves and in other instances the teacher gathered students around a drawing desk to complete part of a drawing. Such exemplification of drawing practice is to be highly commended.

In all lessons observed students were encouraged and prompted to explore the concept under study and to suggest how problems should be solved and why each step was taken in the solution of a problem. This approach to the teaching of Technical Graphics and Drawing is to be highly commended as it helps to ensure that students fully understand the topics under study.

There was evidence of differentiated teaching methods to meet the needs of students in a number of lessons observed. In such instances students were assisted in completing drawings through individual support and guidance. Such students were also supported in most lessons observed by new subject matter being introduced in incremental and manageable steps.

Classroom management was effective and was conducive to a safe, orderly and participative learning environment. Classroom discipline was supported by appropriate lesson pacing, and by constant movement around the classroom to ensure students were on task and engaged in lesson activities. Teacher movement around the room also afforded teachers the opportunity to assess student understanding of the topic.

Teacher-student interactions were engaging, purposeful and mutually respectful. In all instances student responses were affirmed. Where student responses were not correct these were fully explored with the student and class to outline why they were incorrect. Such use of student responses is to be highly commended.

The classroom environment is stimulating for learning and teaching and student achievement through drawings is acknowledged around the room. It is suggested that this strategy of displaying student work should be extended to all year groups as it will serve as a stimulus and source of motivation for the present cohort of students. It will also provide the opportunity to demonstrate and model high quality draughtsmanship.

In the lessons observed students demonstrated a willingness to co-operate with their teacher in their learning and engaged in all classroom activities and discussions. In all lessons observed students were active in their learning and the majority of students in the lessons observed demonstrated a very good quality of understanding through their questioning and responses to questions and completion of drawings.

The portfolios observed in all lessons evaluated indicated an appropriate level of learning. The quality of portfolios was at a level appropriate to each class group.

ASSESSMENT

The Technical Graphics and Technical Drawing teachers implement agreed whole-school assessment procedures. A range of assessment modes is regularly used to assess student competence and progress. These include questioning in class, monitoring and evaluation of student portfolios and homework, end of topic class tests and end of term class tests. Teachers continually monitor student progress and written reports are regularly sent to all parents.

Feedback on assessment is used to assist students to reflect on their learning. In some instances this is done through written comments on student drawings and in other instances oral feedback is

provided to students when completing drawings in class and upon the completion of drawings. It is recommended that feedback should be provided to students in all class groups on a regular basis through the evaluation of portfolios, in particular at senior cycle. This will enable teachers to evaluate and modify their teaching strategies where appropriate and will also help to diagnose and address individual and class learning needs.

The level and frequency of homework assigned to students varies across year groups. When homework is assigned it is corrected promptly. Students are sometimes asked to finish questions started in class or to set up a question for the next lesson. In other instances students are asked to complete questions to consolidate learning in class. While acknowledging the value of asking students to complete drawings started in class, first and second year students should be asked to complete a new drawing that consolidates the material covered in class at least once per week, and third, fifth and sixth year students at least twice per week. It is further recommended that developmental feedback should be provided on all assigned homework where appropriate. As senior cycle students do not store their drawing portfolios in school, they should be asked to bring them in to school on a regular basis so teachers can ensure students complete assigned drawings.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- There is an open choice of subjects for junior and senior cycle.
- Students receive an excellent level of support when choosing optional subjects.
- The Technical Drawing room is well resourced and well equipped.
- Teachers work collaboratively as a subject department.
- The subject plan includes long-term schemes of work which provide a clear description of the topic areas to be covered in each year of the course.
- All lessons observed had a clear learning intention and this was shared with students at the start of each lesson.
- In all lessons teachers used the board to sketch drawing principles and constructions to assist students in visualising the subject matter.
- In all lessons observed teachers demonstrated and modelled very good drawing practice.
- In all lessons observed students were encouraged and prompted to explore the concept under study and to suggest how problems should be solved and why each step was taken in the solution of a problem.
- Classroom management was effective and was conducive to a safe, orderly and participative learning environment.
- There was very good use of student responses and students were affirmed for their contributions in each lesson observed.
- A range of assessment modes is regularly used to assess student competence and progress.

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

- The subject teachers should develop short-term schemes of work that include; a list of drawing titles and the associated geometric principles for each section of the course and evaluation/comment section for each topic area.

- Homework that consolidates learning in class through the completion of new drawing problems should be assigned on a regular basis for all class groups.

Post-evaluation meetings were held with the teachers of Technical Graphics and Technical Drawing and with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.