

An Roinn Oideachais agus Scileanna

Department of Education and Skills

**Subject Inspection of Technical Graphics and
Design and Communication Graphics**

REPORT

**Abbey Community College
Wicklow, County Wicklow
Roll number: 70820K**

Date of inspection: 23 March 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 TECHNICAL GRAPHICS AND
DESIGN AND COMMUNICATION GRAPHICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Abbey Community College. It presents the findings of an evaluation of the quality of teaching and learning in Technical Graphics (TG) and Design and Communication Graphics (DCG) and makes recommendations for the further development of the teaching of these subjects in the school. The evaluation was conducted over two days, 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 deputy 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, and the response of the board will be found in the appendix of this report.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Students in Abbey Community College have the opportunity to access TG and DCG at junior and senior cycle respectively. Students enrolled in the Leaving Certificate Applied (LCA) programme are given the opportunity to study Graphics and Construction Studies as a vocational specialism. Currently Transition Year (TY) students may not choose DCG. However it was reported during the inspection that plans are in place to reinstate a TY DCG module in the coming year. This would be a most welcome development.

Timetabling of graphics subjects is generally appropriate. However, one anomaly exists where fifth-year DCG is timetabled in two separate slots on the same day. This situation should be avoided if at all possible.

The graphics specialist room is well equipped and considerable efforts have recently been made to ensure that the required information and communication technology (ICT) resources are easily accessible during lessons. This room is prioritised for graphics lessons and provides the subject department with a good base classroom where resources, students' work and teaching aids may be stored and accessed readily.

The subject department has attended the recent continuing professional development (CPD) courses provided by the Technology Subjects Support Service (t⁴). In addition to this, members of the subject department have attended an advanced computer aided design (CAD) modelling course and CPD courses to support teaching and learning within the LCA programme. This commitment to CPD by both senior management and the subject department is commended.

As the school is due to amalgamate with another school in the town next year, a number of restrictions have been placed on the optional subject bands at junior cycle to ensure that the transition occurs seamlessly. As a result of this, TG is offered in a band with Home Economic and Business Studies. This configuration may be a contributory factor in the low uptake of the subject among girls. Ideally, optional subject bands should be formed based on students' preferences, as is the case at senior cycle, and this should be considered when designing the subject choice structures in future.

The school has put a number of measures in place to support students at optional subject decision-making times. These initiatives include an open night for parents and a 'school in action' day where prospective students get the opportunity to experience the various subject offered for a short period of time. These are worthwhile interventions and should be continued in the absence of a more substantial sampling programme.

PLANNING AND PREPARATION

Senior management facilitates subject planning by allocating time for meetings each term. Records of these meetings are maintained and were presented during the inspection. These records demonstrated an engagement in reflective planning and also highlighted a number of pertinent issues that are currently being discussed at subject department level. This engagement in meaningful dialogue with a view to improvement within the subject department is commended. A subject co-ordinator has been appointed and this position rotates among all members of the department, as is best practice. The role of the co-ordinator is to facilitate the sharing of resources, convene meetings and to maintain the subject plan. These duties are carried out effectively.

A very good quality subject plan has been developed by the subject department. This plan includes a section that identifies areas for development through the reflective use of diagnostic windows. This type of self-evaluation is commended. Through this self-evaluation, the subject department has identified supporting students with numeracy difficulties as an area for development. This is most a worthwhile endeavour and should be pursued using the department's own action planning template that outlines: measurable targets, tasks, timeframes and success criteria.

A key area for development in the school is to reduce the number of students who are unsuccessful in the Leaving Certificate ordinary level DCG examination. The subject department should develop an action plan to address this developmental priority. Strategies that should be considered include: maximising the uptake of higher level in the Junior Certificate TG examination, incorporating assessment-for-learning (AfL) techniques into graphics lessons and increased profiling, testing and feedback for students.

The subject plan also includes a number of very useful language supports for newcomer students. These supports are given to all applicable students in order to help with the identification of technical terms and common items of equipment. This initiative is commended.

To further improve the subject plan, relevant cross-curricular and extracurricular planning could be included. Details of the school's participation in the "*Formula 1 in Schools*" competition could be expanded and the cross-curricular links could be identified and developed in the relevant subjects.

Very good quality common curricular plans have been developed by the subject department. These plans have been developed based on students' learning outcomes, as is best practice. These plans are generally appropriate for each year group; however the subject department should consider reviewing the first-year plan with a view to increasing students' abilities in the area of representing three-dimensional objects in appropriately arranged two-dimensional views and reducing the time spent developing students' knowledge, understanding and ability to construct polygonal figures.

The planning and preparation for lessons varied from good to excellent. Resources were prepared in advance and in most cases introduced to lessons effectively. A wide variety of resources have been identified and these resources are collated and stored centrally, providing all teachers with the opportunity to access them when necessary. To further develop this good planning, the subject department should consider itemising the vast array of ICT resources at its disposal. In doing so, electronic resources could be easily accessed and listed in the curricular planning documentation to support the development of particular learning outcomes for students.

TEACHING AND LEARNING

In most lessons observed, a clear learning objective was identifiable from the outset. All lessons demonstrated good continuity with previous learning and were consistent with the common curricular planning documentation provided. In most cases, lessons were appropriately structured to promote a blend of active learning and teacher instruction. Where this was not the case the teacher's input could have been increased in order to minimise the passive learning environment. This could have been achieved by structuring the lesson to assist in the introduction, development and recapitulation of the learning outcome and through appropriate teacher-led or student-led activities.

A variety of useful teaching strategies were employed during most of the lessons observed. Pair work and independent learning activities were incorporated successfully into a LCA lesson. These strategies are particularly suited to the programme as they promote the development of students' communication and problem-solving skills.

Blackboard constructions were used to good effect in many lessons and best practice was observed where these drawings utilised colour and shade to highlight important surfaces and line types. Sketching was also used to demonstrate key concepts. While sketching can be a most useful teaching tool, especially during revision, it should be used judiciously unless the quality of sketching is on a par with carefully constructed blackboard drawings.

ICT was incorporated into some lessons. The use of animations and topic-specific presentations helped to vary the students' experiences while also adding value to the learning experience. Some lessons, particularly those dealing with conic sections, would have benefitted from the use of parametric modelling software or the various geometric models available in the classroom. These models can be useful teaching tools and can help students to develop their understanding of what can be an abstract concept. When using ICT or indeed any display medium, teachers should ensure that the area of projection is maximised to guarantee that all students have a clear view of the text and diagrams.

Co-operative teaching was employed as a mode of delivery in a senior cycle DCG lesson. The planning and organisation for the form of co-operative teaching employed in the lesson required significant preparation and the teachers involved are commended for their commitment. It is

suggested that the subject department, in collaboration with senior management, consider the possibility of using co-operative teaching with a first-year TG group in future. Various forms of co-operative teaching, including parallel teaching and station teaching could be employed to develop students' numeracy and measuring skills, their drafting and presentation skills and their understanding of fundamental drawing constructions and conventions such as orthographic projection and pictorial presentations.

Questioning was used to very good effect in most lessons. Students were regularly asked to contribute to discussions and were often chosen to explain various procedures and constructions. This form of dialogue helped to maintain students' attention and also helped teachers to ascertain their level of understanding.

Some students have been encouraged to write short explanatory notes on their drawing sheets and to use colour and shade to embellish their drawings. These techniques are most worthwhile and can be very useful providing students with their own structured study aids. This practice should be encouraged by all members of the subject department.

Students displayed a good standard of learning in the lessons observed and the quality of their portfolio work is appropriate. The level of student attainment in certificate examinations should be addressed in a positive manner by the subject department through the strategies listed in the planning section of this report and through the full implementation of AfL techniques in the classroom.

ASSESSMENT

Formal examinations are held at the end of each term. Additional assessment of student progress would be desirable in order to provide more accurate information relating to students' progress. The subject department is in a very good position to implement this recommendation as it has already identified desired learning outcomes for students in all year groups. These learning outcomes are easily assessable and would help to inform teachers of areas of particular deficiency in students' learning.

Homework is prescribed periodically to students. It is recommended that some form of appropriate homework, designed to build upon the students' classroom activities, be assigned on a more regular basis.

It was reported that the progress of students following the Junior Certificate School Programme (JCSP) and the LCA programme is monitored closely. JCSP student profiles and statements are regularly updated and LCA students' key assignments and tasks are reviewed periodically and stored centrally, as is best practice.

There was evidence of varying levels of formative feedback on students' work and students received good levels of oral feedback during lessons. The subject department should now look at reviewing its assessment policy in light of the proposed implementation of additional AfL techniques in lessons.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- The subject department is well resourced and has access to a good quality graphics specialist room.
- CPD has been fully embraced by the subject department.
- Senior management has facilitated the development of a subject department through the provision of time and through the structuring of the subject planning process.
- A good quality self-evaluative subject plan has been developed by the subject department.
- Very good quality curricular planning documents, based on students' learning outcomes have been developed and are being implemented by all members of the subject department.
- A wide variety of appropriate teaching strategies were implemented effectively during the inspection.
- The subject department uses co-operative teaching to good effect to supplement students' learning.
- Good questioning strategies were employed in most lessons observed.

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

- The subject department should develop an action plan designed to reduce the number of students who are unsuccessful in their Leaving Certificate ordinary level DCG examination.
- The good practices already within the subject department in relation to lesson sequencing, structuring and developing key learning outcomes for students should be adopted by all members of the subject department.
- The subject department should assess students' learning on a more regular basis and use the information gleaned from these assessments to inform teaching and to provide students with relevant and useful feedback.
- Appropriate homework exercises should be assigned on a more regular basis to build upon students' classwork.

Post-evaluation meetings were held with the teachers of TG and DCG and with the deputy principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

Published November 2010.

Appendix

School response to the report

Submitted by the Board of Management

Area 1: Observations on the content of the inspection report

The inspection of this subject area was approached in a very positive manner by the subject department.. They saw it as an opportunity to receive constructive feedback on the status of Technical Graphics and DCG in our school. The experience was both reinforcing and informative. The feedback has guided the college in planning for these subjects and the provisions made to ensure teaching and learning can be further supported.

Some observations we have in relation to the report are as follows.

- Over the last few years there were two years where upon analysis of the ordinary level Technical Drawing results were not in keeping with DES statistics or indeed our own in school experience/expectations. However over the last two years since the introduction of DCG we have had an action plan in place to address these findings.
- This plan included the equipping of a designated DCG room, the presence of the subject during sampling days, the continuous professional development of our teaching staff and the ongoing commitment to reflective practice via the diagnostic window.
- This practice has impacted positively on the subject and for the last two years all candidates have been successful in DCG(Higher and Ordinary Level). The ordinary level students have further benefited from this planning with all but one receiving a C grade or higher over the last two years. Student higher level uptake remains high with over 50% of students taking higher level last year. Since DCG has been in operation just over 95% have received a C grade or higher over the last two years. Our projection for the current year group is that 88% will pursue higher level.
- In relation to Technical Graphics our current projection is that 75% of the students pursuing this subject will opt for higher level. This is actively encouraged by the subject department.
- The department actively encourage the subject to both the male and female students, through sampling and open days, and currently our Technical Graphics exam class has 60% female bias which bodes well for the future of the subject and student access to the subject.

Area 2: Follow-up actions planned or undertaken since the completion of the inspection activity to implement the findings and recommendations of the inspection

On receiving feedback from the inspectorate we have addressed many areas identified and continue to plan for the future with both observations and recommendations in mind.

- The timetable anomaly has been addressed with both fifth and sixth year students receiving DCG across the week in a structure of two doubles and one single.
- We have continued with a team teaching approach for Sixth Years based on the success criteria that we have indicated through our annual results analysis.
- DCG is now a thirteen week module in Transition Year where all students get instructed and gain experience through an in school designed module that incorporates both the ICT aspect of DCG along with the drawing skills required.
- We do consider our involvement with “formula 1 in schools” as an excellent cross curricular link and have inserted a more descriptive narrative to this innovation into the subject folder. However recently a member of the teaching team attended “Jaguar Maths” inservice which we hope will link with DCG into the future also.
- We continue to adopt an AFL approach to student work but have also scheduled class exams to further support our students in making informed subject level choices. This has been agreed by the members of the department.
- In relation to homework the subject department is addressing this through the design of a “Homework published in the school Shareall” for students and teachers to access. A hard copy will also be made available to the students.
- As an aside but worth mentioning is that our school is currently undergoing an extensive Homework Review as part of SDP and all the educational partners are involved. These findings coupled with a revised whole school approach to homework should empower the department further and support student achievement.
- The department continues to meet with a view to sharing their expertise with each other and these meetings are supported by Senior Management through scheduling and attendance.