Subject Inspection of Design and Communication Graphics and Technical Graphics REPORT

Rice College
Ennis, County Clare
Roll number: 61910K

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REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN DESIGN AND COMMUNICATION GRAPHICS AND TECHNICAL GRAPHICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Rice College. It presents the findings of an evaluation of the quality of teaching and learning in Design and Communication Graphics (DCG) and Technical Graphics (TG) 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 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 the subject teachers.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

The school appropriately provides opportunities for students to study DCG and TG in each of the curricular programmes offered in senior cycle and junior cycle respectively, with the exception of Transition Year (TY). The possibility of including a module of DCG in TY should be considered to provide students with experience to support them when making their subject choices for senior cycle.

The use of information and communication technology (ICT) in learning is actively promoted from first year. Students are introduced to the use of the *SolidWorks* computer-aided design (CAD) programme and their awareness of this aspect of graphics is developed from the beginning. This approach is common to each of the technologies in the school and is in line with sound educational practice.

DCG and TG are taught in a variety of rooms including a dedicated graphics room, a computer room, which houses the computer equipment obtained on foot of Department of Education and Skills grants for the introduction of the DCG syllabus, and the two woodwork rooms in the school. These rooms are each appropriate for aspects of teaching and learning in the subjects. While very good facilities are available in the computer room to undertake CAD work, it is noted that there is no student access to computers in the graphics room. This limits the use of CAD by students to those times when the whole class is in the computer room. It is urged that the school examine the possibility of providing a small number of computers within the graphics room so that individual students can access CAD when the need arises within graphics lessons. It is recognised that this may have an impact on the number of students that can be accommodated in the room given its relatively small size.

The DCG and TG teachers are encouraged and facilitated by management to attend continuing professional development (CPD) activities in line with good staff-development practice. They have each availed of the extensive opportunities for CPD that accompanied the introduction of the DCG syllabus. These CPD opportunities included additional evening sessions in Clare Education
Centre. A range of whole-school professional development events have also been provided and availed of by the subject teachers. These have included inputs on teaching methodologies.

Very good practice is followed regarding timetabling for the subjects. TG is allocated four periods per week in second year and in third year. While the allocation of time in first year is two periods per week, this is satisfactory in the context of providing students with experience of the full range of optional subjects to support them in making subject choices. The time allocation in senior cycle, of five periods per week in fifth year and in sixth year, is ample. In all cases, with the exception of first year, the allocated periods are arranged to provide double-period lessons which facilitates the practical nature of the subjects and the completion of drawings within the lesson time.

DCG and TG form part of integrated provision for the technologies curriculum in the school, which also includes Construction Studies (CS) and Materials Technology (Wood) (MTW). These other technologies are also taught by each of the subject teaching team. This represents good practice with regard to the deployment of teachers in line with their qualifications, skills, knowledge and interests. Such balanced deployment also facilitates continuity and the maintenance, over time, of a high level of experience and skills in the teaching of each of the technologies in the school. Classes are formed on a mixed-ability basis and thus all the teachers have experience of teaching at both levels in Junior Certificate and in Leaving Certificate. This is a further strength of the teaching team which is supported by good deployment practice.

The subject department is very well supported with regard to the provision of resources including equipment, class materials and teaching materials. Each room is equipped with a data projector and computer for teaching. The teachers work closely together on the management of resources including their maintenance and updating. The resources made available to students are ample for their full engagement with the practical aspects of the subjects and the completion of project work, which is mandatory in DCG.

While each teacher is initially timetabled to teach, predominantly, in an assigned base room, they swap rooms by agreement as the need arises to ensure equitable access for all students to the specialist resources of the computer room. DCG classes are given priority in the use of the computers. The active collaboration and flexibility seen in arranging access to specialist facilities in this context is characteristic of the unity of purpose and commitment to careful planning seen in the subject department. The grants made available by the Department in connection with the introduction of new syllabuses in the technologies have been expended appropriately in an effective and timely manner with the enthusiastic involvement of the subject teachers of the technologies.

A comprehensive safety statement is in place for the whole school which refers to all specialist rooms and facilities. The statement outlines clear procedures for the management and review of health and safety including consultation with teachers. It is recommended that the teachers of the technologies arrange for the review of the risk assessments relevant to their subjects, assessing any additional hazards identified by them during normal operations and including these in the relevant risk assessment document.

Access to DCG and TG is provided openly and transparently for all students by school management. Appropriate subject-option bands are generated around students’ choices in junior cycle and in senior cycle, and the composition of these bands changes in response to students’ preferences annually. Fair, thorough and transparent arrangements are in place for the provision of information on optional subjects. The arrangements include inputs by the guidance counsellor
and subject teachers that are put in context by the students’ experience of each of the subjects provided in first year and in TY.

DCG and TG are taught in a mixed-ability setting in all classes and good practice is followed with regard to facilitating students’ learning at the appropriate level, providing them with suitable levels of challenge. Students have open access to each level and are encouraged to study at the level that matches their individual ability. They decide the level at which they will sit the respective certificate examination at the appropriate time in consultation with their teacher and parents. Most students sit DCG and TG at the higher level.

PLANNING AND PREPARATION

Senior management facilitates effective subject-department planning by providing time for formal department meetings at the beginning of the school year, when the rotating department co-ordinators are agreed, and once each term. In the case of the technologies, the subject department encompasses CS and MTW as well as DCG and TG. The role of co-ordinator rotates among the members of the subject-department. The department is strongly collaborative with each member agreeing to take the lead in the review and update of one subject area in the current year. The planning structures are robust and effective. Formal subject-department meetings are appropriately documented and records of the outcome of these meetings are inserted in planning documentation. Collaborative planning for implementation of the subject plans is, commendably, supported by on-going informal discussion and meetings throughout the year.

Well-developed plans for DCG and TG provide clear evidence of collaboration in drawing up programmes of work in both subjects which reflect all aspects of the respective syllabuses. The plans are based, in part, on the template devised by the School Development Planning Initiative (SDPI) and reflect a structured approach to the review of the teaching of the subjects in the school and a reflective approach to subject-department development. This represents a very good start to planning for the subjects. Further planning development should involve the integration of the DCG and TG plans, which have many shared areas, into one plan for graphics in junior cycle and senior cycle. The opportunity should be taken to further detail the programmes of work for each year, and particularly for sixth year, including details of the approach taken for completion of the mandatory coursework project in DCG and project work in fifth year of the Leaving Certificate course.

Course planning of TG and MTW for first year is, in practice, integrated to a commendable extent. It is urged that this good planning practice be formalised to a greater extent in the TG first-year subject plan, thus availing of the potential to make best use of the total time allocated to the technologies when teaching areas common to both the TG and MTW syllabuses such as orthographic projection, sketching skills and design communication. This integration benefits from the involvement of each of the teachers in teaching both of these subjects over time.

Further development of the subject plan should include more detail on the use of particular teaching methodologies, strategies and approaches, including the use of discovery learning, group work and other active learning approaches. Such planning for teaching and learning should be linked to specific content in the programmes of work. It is acknowledged and commended that a wide range of appropriate methodologies is used in the teaching of the subjects. Detailing these in the subject plan, as suggested, will provide ample opportunities for further reflection on and sharing of the most successful teaching approaches in the experience of the teachers. This could
further enhance the very good level of planning observed and support further integration of effective methods in teaching and learning.

The overall learning objectives of each course are identified in the subject plans and it is urged, building on this good planning practice, that the learning outcomes for students in each year of their course in TG and DCG be identified. Good practice is followed with regard to the review of the subject plans. The review process should be successful in supporting the implementation of these suggestions for further development.

The course plans make reference to planning for the special educational needs of students. Evidence of the implementation of this planning was seen in the course of the inspection, most notably in the thorough approach adopted by teachers in providing individual classroom support for students. It is urged that this thoroughness be also fully reflected in the subject plan together with existing practice regarding collaboration with the special educational needs department and the support of students’ literacy and support of numeracy within TG and DCG lessons.

The lessons observed in the course of the inspection were carefully prepared and indicated a high level of planning and preparation by the teachers. The expected outcomes for the students were clear and consistent with achievement of the longer-term objectives stated in the respective syllabuses and outlined in the subject plans. While planning took cognisance of the abilities of students overall, it is recommended, where appropriate, that the work planned be differentiated in terms of levels of difficulty to take fuller account of the individual abilities of students. This would provide additional means of ensuring that appropriate challenge can be provided for the more able students while their peers are also equally challenged at their individual levels.

Teachers maintain appropriate records of the work completed by students within standard teachers’ diaries.

Access to the good range of teaching resources, developed by the teachers, including ICT resources which are also made available to other subject areas on application, is assured by careful planning. The ICT resources, available in each of the classrooms used to teach TG and DCG, were not used in the lessons observed. It is urged that full advantage be taken of these resources whenever appropriate. ICT has significant potential to facilitate further differentiation of teaching methods.

**TEACHING AND LEARNING**

The lessons observed were well structured and in, each case, the purpose of the lesson and the expected learning outcomes were shared with the students at the outset. The lessons were generally consistent with the planned programme of work and provided continuity with prior learning. Care should be exercised with regard to the use of state examination material in lessons, particularly in non-examination years, to avoid allowing teaching become too examination-led. The exercises presented in examination questions may be utilised, with suitable modification, in the course of lessons, but unnecessary reference to the examination should be avoided where possible. The students’ should be encouraged to focus on their learning and the development of their skills, understanding and confidence in the subject, all of which will ensure positive examination outcomes in due course. Where alterations had been made in the programme of work, as in the case of a fifth-year DCG class, this served to facilitate the most effective use of resources and to take full advantage of access to the ICT room. This demonstrated appropriate flexibility in planning.
The pace of the lessons was suitable to the class group and transitions from one stage to the next was smooth and unobtrusive, as in the case of a lesson which provided a revisiting of relevant constructions with a second-year class leading into construction of the ellipse. In this lesson, students who were finished the construction of the ellipse were encouraged to practise their freehand sketching skills by producing sketches related to the work they had just completed. While this approach to the reinforcement of sketching skills has much to commend it, the differentiation of the work set for the students, in the manner suggested in the section on planning and preparation earlier in this report, should be considered to further enhance learning outcomes.

The teachers demonstrated a high level of competence and skill in the subject area and this was a source of encouragement and security in learning for the students. The teaching methods employed involved students appropriately and actively in producing their own drawings. Demonstration and other inputs from the teacher were appropriately brief and effective. The instructions to students were, at all times, clear and delivered in a timely fashion, both to the whole class and to individual students whose progress was carefully monitored throughout the lessons. The students’ learning in each of the lessons was reinforced towards the end, either by the students completing exercise that tested their knowledge under the observation of the teacher or by the teacher providing a lively summary of the lesson content.

Student input to the lessons was encouraged and affirmed, in line with good teaching practice, and this was achieved most often by means of effective and well executed questioning. This use of questioning, appropriate to the standard of the student and predominantly directed to the individual, also provided good support for numeracy development. This was demonstrated when students calculated dimensions in a first-year lesson and in the learning of specific subject-related terminology, when students used the correct terms when dealing with the parabola in a fifth-year lesson.

Attendance was checked at the beginning of each lesson and appropriate classroom routines were followed leading to efficient management of the necessary distribution and collection of students’ work and equipment. The students’ folders were well organised and carefully stored in the classroom. The layout of the graphics room was suitable and provided relative ease of movement for the students and teacher given the size of the room and the number of students accommodated. The woodwork room, which accommodated one of the lessons observed, was also well managed to meet the requirements for effective teaching of TD. The management of students facilitated a positive learning environment which provided regular contact between the teacher and each student.

Students interacted pleasantly with their teachers and with each other and there was a general air of positive engagement, with clear expectations of good behaviour. There was very rarely any need for correction, which, when needed, was always achieved sensitively, almost imperceptibly, and with a light touch. It was clear that students shared a clear understanding of the limits of behaviour within the classroom. They willingly accepted these and fulfilled the expectations of their teachers.

The classroom atmosphere was calm and reassuring. An appropriate degree of gentle humour was used often by teachers and this did much to maintain conduciveness for learning. The interest and enthusiasm of the teachers for their subject permeated the classroom and was passed to the students who worked diligently, with enthusiasm and enjoyment, to meet the standards set for them.
The physical environment of the classrooms was stimulating and conducive to learning. The graphics room held displays of students’ work on the walls together with commercially-produced subject-related materials while the woodwork room also displayed woodwork-related materials as well as graphics-related materials.

Active and full engagement by the students with the work being undertaken was to be seen in each of the lessons observed. The students displayed motivation and a commensurate clear understanding and knowledge of the subjects in communication with the inspector. The level of skills development in draughting and sketching was consistent with a high level of achievement and indicated good progress in relation to the planned learning outcomes. The achievement of the students in the certificate examinations is very good and this is consistent with their purposefulness and organisation in their work.

**ASSESSMENT**

Policy regarding assessment and homework, agreed within the subject-department, involves the administration of tests at the end of topics and the sitting of examinations in summer and at Christmas. Mock examinations are held for students in the years of their certificate examinations. The results of all assessments are recorded in the teachers’ diaries and, in the case of the examinations, also in the school database. It is suggested that a consistent approach to combining continuous assessments and term examinations should be agreed and included in the subject plan. It is urged that continuous assessment include all the various aspects of the students’ work, including class work and homework, project work, CAD work and design, so that the assessment modes used can best reflect the assessment objectives of the syllabuses while encouraging and affirming further effort by the students. Assessment criteria, and the weightings applied to continuous assessment and examination outcomes, when agreed, should be shared with students.

There is a common approach to homework in the subject department which follows good assessment practice. Homework is set as needed to reinforce the learning objectives for the current topic being studied and may involve completion of work begun in class. It is also used effectively to prepare students for work which is to be undertaken in the following lessons. In the case of DCG this may involve consideration of design intent or the digital photography, using the mobile phone, of sample objects in preparation for embarking on a design project.

Homework is regularly monitored and graded. In some instances, written feedback is provided for students and this practice, which provides good opportunities for increased assessment for learning (AFL), should be expanded. Assessment formed an integral part of teaching and learning in the lessons observed. Formative assessment was used effectively and very good feedback was provided for students. Teachers were responsive to assessment outcomes, both in the course of the lessons observed and also in the longer term, and modified their teaching approaches to take account of students’ progress.

The outcomes of all continuous assessments and examinations are recorded and are made available for parents at annual parent-teacher meetings. Written reports are sent to parents regularly. The students’ journals provide a further means of communication which is used by teachers to report on the progress of students.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**
The following are the main strengths identified in the evaluation:

- The use of information and communication technology in learning is actively promoted from first year.
- Course planning of Technical Graphics and Materials Technology (Wood) for first year is integrated to a commendable extent.
- Active collaboration and flexibility, seen in arranging access to specialist facilities, is characteristic of the unity of purpose and commitment to careful planning observed in the subject department.
- The lessons observed were carefully prepared, well structured and in each case the purpose of the lesson and the expected learning outcomes were shared with the students at the outset.
- High levels of competence and skill in the subject area were demonstrated by teachers.
- The students displayed motivation and a commensurate clear understanding and knowledge of the subjects.

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

- A written module descriptor for Design and Communication Graphics in Transition Year should be considered.
- Provision of a small number of computers within the graphics room should be considered.
- Further planning development should involve the integration of the Design and Communication Graphics and Technical Graphics subject plans into one plan for graphics in junior cycle and senior cycle, taking the opportunity to further detail the programmes of work for each year.
- The subject plan should include more detail on the use of particular teaching methodologies, linked to specific content in the programmes of work.

Post-evaluation meetings were held with the teachers of TG and DCG 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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